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### TYPHOID FEVER WITH PERMANENT MEMORY DEFECT.

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Of all the acute infectious diseases, typhoid fever is the one which is most frequently accompanied by mental symptoms. How far the type of fever influences the mental condition is difficult to estimate, but, according to Kraepelin, in smallpox, scarlet fever, erysipelas, acute articular rheumatism, and pneumonia, acute transitory excited states preponderate, whereas in typhoid fever a dull delirium with confusion is in the foreground.

In typhoid fever the mental disturbance may come on either during the rise, at the height, or during the fall of the fever, and the severity of the mental symptoms varies according to the grade of the fever.

The fact has been emphasized (Kraepelin quoted by Farrar) that the convalescent period is often delayed, unsatisfactory, or interrupted by relapses, and a condition of "irritable weakness" often remains which for months or years may furnish a suitable soil for the development of a psychosis. Such a condition is usually characterized by an unstable, variable, emotional condition, with fits of anger and impulsive behavior.

In addition to the above cases there are still others which may be called *post-typhoid defect states* in which the striking feature is the permanent memory defect, especially for recent events. Two such cases are reported in this paper.

In all of these conditions there seems to be no doubt but that actual alteration of the brain exists. In the acute conditions the changes in the cortical nerve cells are similar to those produced in

artificial hyperpyrexia, and consist of destruction and dissolution of the Nissl bodies, thereby giving the cell body a rather uniform color. The axis cylinder and other nerve cell processes are more clearly visible than normally; the nucleus is usually shrunken and displaced towards the periphery of the cell. The neuroglia tissue is markedly increased, and around the degenerated nerve cells large numbers of glia cells, for the most part longitudinal in type, may be seen.

*CASE 1.*—In 1910 typhoid fever, followed by an indifferent, placid state, with outbreaks of irritability, and a marked persistent memory reduction for recent events.

S. L., married, 34 years old, jeweler, was admitted to the Psychiatric Clinic, The Johns Hopkins Hospital, on March 24, 1914.

*Personal History.*—The patient had come of a healthy stock, and apparently had developed quite normally. When a child he had suffered from whooping cough, but otherwise had no serious illness.

He had an excellent education, and after leaving school worked successfully as a jeweler.

In 1908 he married, and has one healthy child.

He has never been addicted to alcohol, and had smoked very moderately; he gave a history of gonorrhea when about 20 years old.

*Onset of Sickness.*—In 1910 the patient had a severe attack of typhoid fever. For three months he is stated to have been extremely ill, and to have been unconscious for three or four weeks; he became very emaciated, and is said to have had several convulsive seizures, but no detailed description of these could be obtained. On being taken home he had no fever, but a marked change had taken place in his mental condition, as at times he is stated not to have been able to recognize his own people, "had no memory, and was subject to violent hallucinations." Four or five weeks later he was taken to a sanitarium, and after eight weeks treatment returned home much better, having gained physically and having settled into a quiet, orderly state of mind. His condition at that time was diagnosed as a post-typhoid psychosis, and it was thought that with proper nourishment, rest, fresh air and tonic treatment he would gradually improve. A year later the patient seemed somewhat stronger, but his loss of memory and lack of energy and concentration was so marked that he was quite unable to conduct his business.

During the last two years he has been assisting his father in business, but his work has been entirely routine and mechanical. His friends have noticed that he had no ability to concentrate, and showed an almost entire loss of memory; latterly, he has taken very little interest in life or in his family, and when crossed in the slightest way would become violently excited.

*On Admission.*—The patient was placid and contented; readily adapted himself to the ward routine, and did not express any peculiar ideas. He

answered questions quite promptly and relevantly, and complained simply of loss of memory. He stated that he was able to remember remote events fairly well, but events that happened from day to day he was unable to remember. Up until the time of his typhoid fever, he had been an able and efficient business man, but following his fever he had to give up his business on account of his poor memory.

When asked to give an account of the events following his attack of typhoid fever, many discrepancies and many gaps occurred which the patient was unable to correct. For instance, he stated that he took up business in 1908, and had been in business for four or five years before he was affected with typhoid fever in 1910. He had a poor appreciation of time and place; said that the day was Monday (Tuesday); that the date was March 31 (March 24) and that the place was Washington (Baltimore). When given a name, a number, a town, and a color to remember, he had forgotten three out of the four after a period of three minutes.

His grasp on general information was found to be very defective, as he stated that Boston was the capital of Maryland; that the Civil War took place in 1847, and that Garfield was President at that time. He did simple calculations correctly.

*Physically.*—The patient was a well-nourished man, 34 years old, who showed a slight and equal exaggeration of the deep tendon reflexes, and a marked writing defect very closely resembling that seen in cases of general paralysis.

His pupils were equal, regular in outline, rather widely dilated, but reacted promptly to light and accommodation.

There was no speech disorder. There was no disorder of the internal organs.

An examination of the cerebro-spinal fluid showed three cells per cm., negative globulin test, negative colloidal gold test, and negative Wassermann reaction, both in the blood serum and cerebro-spinal fluid.

*Following Admission.*—During the whole course of his hospital residence the patient maintained an apathetic, listless, indifferent, placid attitude. He seemed perfectly content to stay in the hospital forever; never complained about anything, and never once asked for his discharge. He had no outbreaks of irritability of any kind, and did not express any ideas of suspicion or persecution. He was always disoriented for time, never being able to give the day or the date, but he was usually able to mention the year and the name of the place correctly; he was unable to give the name of his physician, or of his nurse. He thought that he had been admitted to the hospital in January, whereas he had really been admitted on March 24, 1914. His difficulties in memory were very easily and very strikingly brought out when he was given special tests for his power of retention. He was given word-pairs in series of ten and after an interval of one minute he was only able to name from five to six correctly, and after an interval of two minutes he only named three correctly; in repeating numerals containing only seven digits he failed almost uniformly; he was unable to get the gist of a short story even after several readings. These tests were in accord-

ance with the fact that for events previous to his attack of typhoid fever he had a good memory, but for the events following it his memory was very poor.

He was discharged in an unimproved condition on July 16, 1914.

*CASE 2.—In 1903 typhoid fever followed by a marked defect in memory for recent events, which has been persistent, and followed later by an unstable, variable, emotional condition, with vague ideas of persecution.*

J. L., lawyer, 39 years, married, was admitted to the Psychiatric Clinic, The Johns Hopkins Hospital, May 16, 1914.

*Family History.*—A maternal uncle was a drug habitue. One brother suffered from petit mal attacks. Otherwise the family history was entirely negative for any nervous or mental diseases.

*Personal History.*—The patient was born in November, 1875. He was a bright, active, healthy boy, who developed normally. He was not nervous in any way; was fond of outside games, and was exceedingly sociable. He had an excellent education, graduated from the academic department of his university when 19 years old, and from the law department when 21 years old. As a student, he made a very excellent record. Up until one year previous to admission he had been engaged in the active practice of his profession, and had held a number of important appointments. In 1900 he married. His first child was born February, 1901, and the second child in February, 1914. His married life had in every way been perfectly happy.

There was no history of any syphilitic infection; he had always been temperate in the use of alcohol.

*Onset of Sickness.*—In 1903 the patient had a severe attack of typhoid fever, during which he was delirious, and altogether was sick for about eight weeks. Previous to the fever his memory was recognized as most excellent, but immediately after the fever he noticed that his memory for pages and the names of decisions had become exceedingly poor. It was hard for him to concentrate and collect his thoughts. He now had to make notes of everything, and frequently would notice that he would lay a thing down and then forget where he had put it.

For several months following the fever his memory seemed to improve, but practically for the last ten years his memory defect for recent events has been stationary and quite marked. No marked change was noticed in his disposition at that time.

About one year previous to admission he became involved in a will contest, and on account of the fact that an adverse decision was returned, he became suspicious, and felt that the judge was trying to influence his business. He finally got so disgusted with his fellow-lawyers that he decided to give up his practice altogether. It was on account of his poor memory and his ill-founded suspicions that he was admitted to the Psychiatric Clinic for examination.

*On Admission, May 16, 1914.*—The patient seemed very happy and elated, talked in great detail, and laughed in a boisterous way. He stated that for some time back he had been losing grip on himself, but that otherwise he



did not think that there was very much wrong with him. In giving a history of the development of his sickness it was noticed numerous discrepancies occurred in his dates. For instance, he at one time stated that he had gone to California in May, 1913, and then later, when again questioned, he changed his previous statement to July, 1913. He complained spontaneously of his forgetfulness, and in stating his troubles gave a very rambling and confused account with the expression of vague ideas of persecution.

He was correctly oriented for time and place, but was unable to give the name of the physician who had examined him, and could not give his nurse's name.

The most striking defect was elicited when his power of retention for recent events was tested. He was given a name, number, and color to remember, but had forgotten all three of them after a period of 20 minutes. When tested with the repetition of numerals, he failed once in a series containing seven digits, and failed three times in a series containing eight digits; when given a numeral containing twelve digits, he was unable to repeat it correctly, even after twelve repetitions. With word-pairs in series of ten, after two minutes, he was only able to give three correctly in the first series and four correctly in the second series.

His memory for remote events was good, and his grasp on general information and his ability to calculate were also practically unimpaired.

*Physically.*—The patient was a well-nourished man, who presented no neurological features, and no disorder of the internal organs.

*Following Admission.*—During the whole period of his hospital residence the patient continued to behave in a rather excitable way. At times he would be happy; would talk continuously, and would laugh uproariously, but at other times he would tend to become despondent and rather suspicious, apparently believing that he was being tested in various indirect ways. From time to time he complained about the water having a bad taste; thought that his sense of smell was tested in one of the rooms or halls, and that various substances were put in his food to stimulate him. On one occasion he complained about a fork not being set for him at the breakfast table and wondered why that was.

All along, however, the outstanding feature was his defect of memory. Shortly after admission, one morning he asked over and over again if he might get up and dress himself, apparently having no idea that he had asked the same question a few minutes previously. Sometimes he seemed to realize this defect in his memory himself, and not infrequently would say, "I cannot concentrate; my memory is a little poor; I will have to brush up on that." In playing cards it was very noticeable that he would forget how many cards to deal, and never seemed to be able to remember who had dealt the cards last. In finding his way about the building, he frequently made quite striking mistakes in trying to find places where he had been taken previously.

On June 15, 1914, he was discharged from the hospital in an unimproved condition.

In both of the cases reported the close relationship and dependence of the memory defect upon the typhoid fever, is so striking that one unhesitatingly would look upon such cases as defect states directly due to the infectious process.

According to Bonhoeffer, one not infrequently sees, as a residual of typhoid fever, cases showing a slight defect in the power of retention, and a certain apathy and listlessness. Such cases, when associated with cerebral symptoms, *e. g.*, speech and writing defect, slight aphasic disorders, pareses, etc., closely resemble either cases of dementia paralytica or of arteriosclerotic brain disease and form the group of the so-called post-infectious pseudo-paralytic defect states.

The case of S. L., on account of the exaggeration of the tendon reflexes and the marked writing defect, naturally brought up the question of a general paralytic process, but the development of the case and the normal pupils, the absence of any speech defect and the negative blood and cerebrospinal fluid examinations were quite sufficient to rule out any such process. The fact that in the one case the memory defect has been of four years duration and in the other of 11 years duration makes these cases very closely analagous to the type of case described by Mönkemöller and referred to in Bonhoeffer's monograph on the "Infectionspsychosen." Mönkemöller's case was that of a man, 66 years, who 28 years previously had had typhoid fever. Repeated examinations showed that this patient had an excellent memory for events preceding the onset of the fever, but events happening from day to day following the fever he was totally unable to remember.

Owing to the few observations in the literature, it was thought advisable to report the above two additional cases. My thanks are due to Professor Adolf Meyer, Director of the Psychiatric Clinic, for his permission to do so.

## THE PSYCHIC FACTORS IN MENTAL DISORDER

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Although it has long been realized that psychic factors play a part in the production of mental disorder, our ideas in regard to what these factors are, how they operate and how we should deal with them, still remain rather vague. This no doubt has largely been due to our ignorance of normal psychology. Psychologists in the past have not given us a conception of the nature of our mental processes which would enable us to understand how these processes could become distorted and give rise to the symptoms of mental disease. Recently, however, William McDougall, in his book, entitled "An Introduction to Social Psychology," has outlined a conception of the nature of mental activity which promises to be of considerable value as a means of meeting this need. My present purpose is merely to call attention to the probable value of this theory and to indicate how it may be used in the study of the problems of mental disorder. First, I shall endeavor to present his conception very briefly, modifying it somewhat, however, so that it may be better fitted to my purpose; then I shall present the analysis of an illustrative case, to show how it may be used as an instrument to explain the symptoms of mental disorder; and finally I shall discuss it briefly in its different bearings upon the problems with which we have to deal.

This conception is the outcome of our increased knowledge of animal psychology. It assumes that man has instincts as well as the animals and that all his mental activity is due to impulses which come from these instincts. By instinct is meant, not the old idea of some mysterious faculty which Providence has given to animals because the higher faculty of reason has been denied them, but merely those innate specific tendencies of the mind which are common to all members of any one species and which impel the individual to react to certain definite kinds of stimuli with certain definite types of conduct without having first learned

from experience the need of such conduct. Thus the tendency to run away, which is aroused in the presence of danger, is regarded as due to impulses coming from the instinct of flight. Similarly, the tendency to attack that which injures us or interferes in any way with the attainment of our desires, is regarded as due to impulses arising in the instinct of pugnacity. It is assumed that all conduct, if traced back to its source, will be found to arise in impulses such as these.

But, with the impulse to a certain type of conduct to which an instinct gives rise, there is also an emotion or affect. Thus, with the impulse to run away which is aroused in the presence of danger, we have an emotion which we call fear. Similarly, when the instinct of pugnacity is stimulated, we have, with the impulse to attack, an emotion which we call anger, and, if we consider our instinctive tendencies one by one, we find that each one of them has its characteristic emotion which is always felt when the instinct is stimulated. Thus it is evident that emotion, as well as motor activity, may be produced by the stimulation of an instinct. But is all emotion due to this cause? We assume that it is, and our assumption is supported by the fact that if one observes his emotions carefully he will find that, whenever an emotion is felt, an impulse to a corresponding type of motor reaction occurs with it. Thus, with the emotion of fear there is always an impulse to escape from that which arouses the fear, and with the emotion of anger there is always an impulse to attack or injure that against which the anger is directed. We are, therefore, justified in assuming that all emotion, as well as all conduct, is due to instinctive process, or, as McDougall expresses it, that "Emotion is the affective aspect of instinctive process."

It would be of distinct advantage to us if we could know definitely what the instincts are which lie at the base of human conduct and what the emotions are that accompany them. McDougall, in addition to certain "non-specific innate tendencies," gives a list of about 12 instincts which he regards as primary and the source of all thought and action. The most important of these are:

The instinct of flight with the emotion of fear.

The instinct of repulsion with the emotion of disgust.

The instinct of curiosity with the emotion of wonder.

The instinct of pugnacity with the emotion of anger.

The instincts of self-assertion and self-abasement with the emotions of positive and negative self-feeling.

The parental instinct with the emotion of tender feeling.

The sexual instinct with its accompanying emotion.

A classification such as this, of course, must be regarded as merely provisional; nevertheless it is useful as a working basis and as such we shall make use of it.<sup>1</sup>

The purpose of each of these instincts is to give rise to a definite type of conduct suited to one particular kind of situation. But what is it that makes the instinct become active just at the time when the type of conduct to which it gives rise is required? In every case it is a stimulus afforded by the situation. In order that the instinct may fulfill its purpose, it has what we may regard as a cognitive part through which it is stimulated to activity by those conditions in which it is likely to prove useful. This cognitive part may be compared to the afferent part of a reflex; it may be regarded as a mechanism so adjusted that it will respond to situations of the kind to which the instinct is intended to react. When such situations arise, it causes the individual to pay attention to them and carries a stimulus to the instinct, which then gives rise to the type of conduct that is characteristic of it.

Bearing the preceding facts in mind, we may regard an instinct as a mechanism made up of three parts:

First, an afferent or cognitive part, which causes the individual to perceive, and pay attention to, situations of a certain kind and which stimulates the instinct to activity on perceiving such situations.

Second, an affective part, through which the instinct gives rise to the emotion which is characteristic of it.

Third, an efferent or conative part, through which it gives rise to a characteristic type of conduct which as a rule is suited to situations of the kind by which the instinct is stimulated.

<sup>1</sup> It is not to be supposed, however, that these instincts are regarded as entirely separate and distinct sources of energy. They are very closely related; indeed McDougall has compared them to channels, through any one of which may flow energy from a great common reservoir (William McDougall, *The Source and Direction of Psychophysical Energy*, *Am. Jour. Insanity*, 1913, special number).



Thus, taking the fear instinct as an example, we may say that it has a cognitive part which causes the individual to pay attention to situations containing an element of danger and by which the instinct is stimulated to activity on perceiving such danger; an affective part which causes him to react to the stimulus with an emotion of fear, and a conative part which gives rise to an impulse to escape.

But, if the mental mechanism underlying behavior is the crude thing we have here assumed it to be, how can it produce the highly complex reactions required of civilized man? If we consider the instincts from the standpoint of evolution, we assume that they first developed in very low forms of life, in order to give rise to the very few and simple actions of which animals low in the scale are capable. One might almost say in regard to such low forms of life that for each situation to which they must react an instinct is provided, and that the situation calls forth the appropriate reaction almost as automatically as the pressing of a button causes the ringing of a bell. As we rise higher in the scale, however, the situations become more numerous and complex, and the kinds of conduct required show a corresponding increase in complexity. To meet these more complex requirements, man and the higher forms of animal life have developed a capacity for modifying their instinctive reactions to suit these conditions, which we call their capacity for adjustment, and we shall assume the existence of psychic mechanisms, by means of which these adjustments are made. These we shall call the mechanisms of adjustment.

In this process of adjustment, we have first a modification of the cognitive part of the instinct. Let us take the fear instinct as an example: Animals low in the scale have an innate disposition to be frightened by a limited number of sense impressions, and, as their capacity for adjustment is very limited, they retain through life, almost unchanged, their tendency to react with fear to these sense impressions and to these alone. But in man the case is quite different; he, like the lower animals, has this innate disposition to be frightened by certain things; for instance, a loud noise is apt to excite fear in the child prior to all experience of hurt or danger; in the same way there is an innate tendency to fear whatever is strange or unfamiliar; but, as time goes on and as the experience of possible sources of injury become wider, there

is a constantly increasing number of objects and sense impressions which are capable of arousing within him the instinct of flight. The process of adjustment has produced a modification of the cognitive part of the instinct.

There is, however, also a modification of the conative part of the process. As the individual's experience widens, he not only reacts to a greater variety of stimuli, but there is also a corresponding increase in the variety of forms of conduct to which his instinct may give rise. Let us again take the fear instinct. At first it tends to produce only a few simple characteristic reactions, such as flight, and, as has been said, the more primitive forms of animal life never get beyond this; their conduct always remains what may be called purely instinctive; but in man the conduct resulting from the fear impulse is modified by a variety of factors, such as experience, intelligence, habit and the inhibiting force of other instincts, until it becomes exceedingly complex. For example, fear may impel a man to actual flight in order to escape some danger, but it may also impel him to lie or to resort to some other form of deception, in order to escape the harm which might befall him if some fault of which he had been guilty were to be discovered. Also it may impel him to work at some disagreeable task in order to escape the harm, possibly loss of position, which would be the result of his failure to do so. Thus instinctive process is modified in both its cognitive and conative parts by the mechanisms of adjustment; only in its affective part does it remain unaltered, for the emotion produced by an instinct is always the same, whatever the circumstances that caused it to become active or the forms of conduct to which it gave rise.

It is impossible for us to discuss at length the psychic mechanisms by means of which these adjustments are made. I might, however, mention three as examples. The first is intelligence, intelligent conduct being simply instinctive conduct with the instinctive impulses directed by the intelligence into certain channels in which they are most likely to prove of value. The second is imitation, which causes the individual to direct his impulses into the forms of activity which he sees made use of by those about him. By means of it the less intelligent and less experienced are enabled to make use of the methods of reaction which those whom they copy have been led to adopt by reason of their greater

intelligence and experience; also, it produces a uniformity in the behavior of the members of a community, herd or flock, which is frequently of great social value. The third mechanism is that of pleasure and pain. This is perhaps the most primitive and fundamental of all. Pleasure and pain are frequently thought of as emotions, but McDougall, for the reason that they may qualify all forms of mental process, including the emotions, does not regard them as emotions themselves. For present purposes pleasure and pain may be regarded as the affective parts of very primitive mechanisms of adjustment which operate by cutting short those forms of activity which are painful in their results and prolonging those which are pleasurable. Their value is due to the fact that those reactions which produce pain, as a rule, are doing some harm to the organism and should therefore be inhibited; while on the other hand, where the affect is a pleasurable one, we have a reaction which is meeting its needs, to some extent at least and, therefore, as a rule, should be prolonged.

Now the conception of mental process here offered has the great merit that it enables us to conceive how a mental disorder may arise from purely mental causes. If all mental activity is due to certain instinctive impulses, to certain forces which must find some outlet, and if there is a mechanism of adjustment, the purpose of which is to control and direct these impulses into suitable channels of activity, it follows that conditions may sometimes arise when this mechanism will prove inadequate to the needs of the situation; when it will be unable to control these instinctive forces or find for them sufficient and satisfactory outlet. As a result they will find outlet for themselves by undesirable channels, giving rise to thought and action which we recognize as abnormal and which will constitute a psychosis.

Here then we have a possible explanation of mental disorder. But is it a satisfactory one? That is to say, is it an explanation that fits the facts? The proof of a pudding is in the eating, and the value of an hypothesis can only be determined by applying it to the problems upon which it is intended to throw light and seeing how far it fulfills this purpose. In order to show, therefore, that the one here offered may be applied successfully in the study of cases of mental disorder, that it does fit the facts, I shall present the analysis of an illustrative case. I shall first present the

facts of the case and then proceed to interpret them on the basis of the foregoing conception.<sup>1</sup>

The case is that of a young man, 23 years of age, who came to the hospital under the diagnosis of catatonic stupor.

Inquiry in regard to his early life showed that he had grown up in a sheltered environment in which he had always been permitted to shirk whatever was hard or disagreeable and to live a life of idleness. This state of affairs was mainly due to a fond, indulgent mother, who petted him, made much of his every little ailment and permitted him to do almost as he pleased. He was apparently of about average intelligence, and in disposition was good-natured, indolent, rather timid. He was irregular in his attendance at school, playing truant and idling about the street. When 14 years of age he dropped school altogether, probably because the death of his father, which occurred about this time, freed him from even the slight degree of discipline which previously had been imposed upon him. From now on he spent practically all of his time in loafing about the house. At different times positions were secured for him, but he never held any of them for more than a few weeks. Whenever he encountered any difficulty or unpleasantness in his work he would give it up and fall back upon his mother for support, and, as she was always afraid he would work too hard, she encouraged him in this conduct. When about 18, he made a more serious attempt to become self-supporting; he took a course in a school for chauffeurs and after graduating from it held several positions, but none for more than a very short time. Here, as before, he gave up at the slightest difficulty, and, as a result, soon dropped back into his old habits of idleness and dependence upon his mother. He now began to drink quite heavily, but after a time succeeded in breaking himself of this habit. Later he took it up again, and for a year before coming to the hospital was taking about a quart of whiskey a day. He was a solitary drinker, and, for the year preceding his admission, it was his custom to sit up in his room until 3 o'clock in the morning, reading trashy fiction, with a bottle of whiskey and a pitcher of ice water on the table beside him.

A tendency to fear was one of his most prominent characteristics. For example, when he was 12 years of age he narrowly escaped drowning, and ever since this event he has been "water-shy." Again, after the first time he had sexual intercourse, he was so much upset by the fear that he might have contracted some venereal disease that his brother, in order to ease his mind, had him examined by a physician. Then, when 18 or 19, he witnessed a trifling street accident and after this feared that some one of his family might meet with a similar accident, and he made a practice of warning the different members of the household to be careful when going out on the street. He had from boyhood a fear of doctors; he was always afraid to have a physician examine him because, as he admitted,

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<sup>1</sup> I wish to express my thanks to Dr. William L. Russell, Med. Sup., Bloomingdale Hospital, for permission to use this case.

he feared it might be discovered that he masturbated. He thought that a physician could tell this from his general appearance, his eyes and his urine, and that, having discovered it, he might want to operate upon him, perhaps remove his testicles.

Regarding his sexual life, he admits having practised masturbation up to the age of 18, but it seems probable from the history given by his family that he continued this habit to an excessive degree right up to the onset of his psychosis, and that it caused a great deal of shame and anxiety. His family used to tell him all the horrible things they could think of regarding its ill effects in the hope of frightening him out of it, and he used to become very much upset whenever the subject was mentioned. His brother, in order to break him of the habit, tried to induce him to go with women, but this the patient would not do, being restrained by his excessive timidity and fear of venereal disease. When about 18 he fell in love with a young woman, whom we shall call Miss X, who became a member of the household at this time. He proposed marriage after he had known her a few months, and she refused him. As a matter of fact, he was in no position to support a wife and marriage for him was out of the question. He states that he took up the occupation of chauffeur at this time because he desired to place himself in a position where he would be able to marry, and it was only after Miss X. refused him that he commenced to drink to excess. But, although she refused to marry him, the intimacy between them continued; they remained in the same house together; she allowed him to caress her and, he states, continued to be a source of stimulation for his erotic desires. When he was about 21 another woman, Mrs. Y., became intimate with the family. She visited the house frequently, sometimes when no one was at home but the patient. She was a woman of loose morals and appears to have exerted herself to arouse his passion. His brother, noticing her attitude, warned him to have nothing to do with her, saying it was dangerous to have sexual intercourse in his own home and with a woman who was on intimate terms with the family. The patient, nevertheless, fondled her a good deal and on a couple of occasions, when they were alone in the house together, he "came very near having intercourse with her," but was always restrained by his fear and the thought of his brother's warning. Moreover he believed it wrong to have anything to do with a married woman.

The patient, himself, dates the onset of his psychosis from the time, about a year before his admission to the hospital, when he began to drink heavily. He says that at this time he noticed that he was nervous, apprehensive and irritable. He showed a tendency to be quarrelsome, which was foreign to his nature. He was more active than formerly. He could not keep still. He used to walk up and down all the time and he noticed that he walked faster than was usual for him. He also demanded more life and amusement. He wanted to hear the piano playing and see those about him making merry. He slept poorly. He became more timid. He feared someone might be after him. He got in the habit of locking himself in his room at night. He developed fears with a strong sexual coloring. He thought that people might think he had raped Mrs. Y. when she had been alone with him



in the house. He came to fear that she might accuse him of having done this; then that other women in the neighborhood might also accuse him of having raped them. If a woman were to get off of a street car at the same corner as himself and walk up the street behind him he would have the idea that she was going to blackmail him and accuse him of having had sexual intercourse with her. He thought people on the street looked at him as if they thought he had committed rape, a thing which he considered worse than murder. Sometimes people made remarks about him and followed him. He also had fears regarding his health. He worried because he was eating and sleeping poorly and because he was losing weight. He realized that he was smoking and drinking too much and feared he might develop delirium tremens. About five months before his admission a bird pecked him in the eye and a short time afterwards the bird died. Someone told him a bird's bite was dangerous and this alarmed him a great deal. He feared he might get "blood poisoning." He spent hours in front of the mirror looking at his eyes. He used to put boric acid, peroxide and all kinds of things on them. He asked his brother if one of his pupils were not larger than the other, as he thought it possible that smoking and drinking too much might have made them unequal. He thought people on the street noticed his eyes; that they could see they were not normal. He showed anxiety over other things that were quite trivial. For example, someone made a chance remark about the high cost of living, and, after hearing this, he began to worry about household expenses. He also worried lest his brother who worked on a coasting steamer might be drowned, and on one occasion, when induced to accompany him on one of his trips, he was in constant terror that the ship would sink.

Three weeks before admission he began to hear imaginary voices. These voices accused him of rape and spoke of the terrible state he was in. For instance, they would say, "Isn't it too bad he's that way?" or, "I wouldn't be in his shoes for five hundred dollars." It had been noticed shortly before this that he was becoming very dull and inactive. He got so that he would stand for hours in front of a chair as if undecided whether to sit down or not. Five days before admission he refused food altogether and held his urine and feces as long as possible. When brought to the hospital he was in a dull, stuporous condition, apparently indifferent to all that went on about him. He would not speak and he had to be spoon fed. His weight, which was normally about 200 pounds, had dropped to 145 pounds. During his stay in the hospital it fell as low as 135 pounds. He remained in this dull condition for some time and then began slowly to improve. After eight months he would smile when spoken to, but still refused to speak. Two months later he was reading the newspapers and apparently interested in all that went on about him, and his weight had increased to 194 pounds. When alone with his attendant he would now sometimes whisper "yes" or "no," in answer to a question, but if anyone else were present he would remain silent. He would smile, however, when anyone spoke to him and would write answers to questions on a piece of paper. The first person he conversed at all freely with was his brother. Then he began to talk with the

attendants he knew best, but it was not until about six weeks after that he could be induced to speak in the presence of a physician. Thirteen months after admission he was apparently in as good physical and mental health as at any time previous to his illness.

After his recovery he showed a good memory for the time of his apparent stupor. He not only remembered clearly the outstanding facts of his illness, but was able to recall to the mind of the physician trivial incidents which the latter had forgotten. He said that while he lay in bed, apparently dull and indifferent, he was really quite keenly alert to all that went on about him, and that his mood, instead of being one of indifference, was throughout this period one of intense fear. He had been much frightened at being dragged away to a hospital. He believed he was going to die and never see home again. At first he thought that the place was a prison and that he had been brought here for drinking and being so stubborn and foolish. He thought his family did not care for him any more. He continued to worry about his health; thought he had only a few months to live; feared he would develop delirium tremens. He said, "What got me worrying was when I dropped down to that 135 pounds." He was always more nervous in the daytime when people were around, because he feared they might come into his room and do something to him. During the first few months he continued to hear voices. They still accused him of committing rape and made remarks about his unfortunate condition. Then his fear began to abate; he ceased to hallucinate and his physical condition improved. He attributed his peculiarities of conduct to fear. He said that he lay still because he was afraid to move. He was afraid to eat, afraid to urinate or defecate. When the physician came into his room and tested his sensibility to pain by pricking him with a pin he felt the pin prick, but he was very frightened and lay still and controlled his nerves instead of breaking out, because he feared he might be put in a padded cell or a straight jacket. He was afraid to move, even when told to do so. He feared he might get into a position which would be "detrimental" to him. He was afraid to put out his tongue lest someone might give him an "uppercut." He moved more with one particular attendant than with any of the others, because he knew him better and because this man was always very gentle with him. He said the reason he remained without speaking for so many weeks after he had begun to improve was because he had a little nervousness in his throat and it seemed to be contracted.

After recovering from his stupor he continued to display the timidity and indolence which had always been his most striking characteristics, and when he was examined by means of the psychogalvanometer and by free association tests his mind was found to be still dominated by erotic ideas and a strong affect of fear, which found its most striking expression in the old idea, always clearly indicated, although not frankly expressed, that he might lose control of himself and commit a sexual assault upon some woman. He was discharged after 13 months in the hospital, but on arriving home he became nervous and apprehensive. He felt alarmed because the rooms were smaller than he had been used to in the hospital. He feared

that in the noisy city he would be unable to sleep. The fact that there were no guards on the windows bothered him; he feared he might walk in his sleep and fall out. He was also in constant terror that Mrs. Y. might come in, until he was told that she had moved away and no longer visited the family. On account of his nervousness, he was at his own request brought back to the hospital the next day and has remained here ever since. Since his return he has grown steadily more dull and inactive. He works in the occupational department, but shows no interest or energy in his work. Anything unusual frightens him; such a thing, for instance, as changing his room from one hall to another. He is gradually becoming more silent; will no longer speak in the presence of the physicians, although he still talks to his brother when they are alone together. He gives the impression of being rather indifferent and his silence might be attributed to obstinacy, but it is noticeable that, on the occasions when he does speak, his voice trembles and he appears to have a great deal of difficulty in forcing himself to do so. In every way he is steadily becoming more inactive and more cut off from the world about him.

Let us now see if the theory of mental disorder with which we set out will furnish an adequate explanation of the facts of this case. We shall begin our analysis by asking ourselves what the dominant characteristics of the psychosis are. There are apparently two:

First, an affect of intense fear.

Second, a motor condition of almost complete inactivity.

Turning then to the patient's past life, let us ask ourselves what are the dominant characteristics of his personality. We find that they are the same two things:

First, fear, or timidity, shown in his fear of doctors, water, etc.

Second, passivity, shown in his habits of indolence, his tendency to give up work whenever he encountered any difficulty.

It would seem that the fear and passivity in the patient's early life might bear some relation to the same characteristics in his psychosis, but, before attempting to show that such a relationship did exist, let us endeavor to determine what factors were responsible for the development of these characteristics in the first place.

Since we consider psychology to be a branch of biology, let us begin our inquiry by asking ourselves what factor biology shows us to be most important in producing modifications of the living organism. Obviously it is the tendency shown by all forms of life to adapt themselves to the environment in which they are placed,

and when we come to inquire into the way in which this adaptation is brought about, we find that it depends upon the tendency for those parts and functions to develop most which receive the most use. Thus, man placed in an environment where he is obliged to do heavy manual labor, develops powerful muscles, merely through making use of them. Similarly, although in a less obvious way, he adapts himself to the other conditions of life. For example, in the Arctic regions his heat producing mechanism is developed by reason of the demands made upon it and so he becomes better fitted to withstand the cold. Now, does this principle apply in the psychological field as well? Are mental characteristics developed in the same way and as a result of the same causes? Obviously they are. A man placed in an environment where he is obliged to exercise courage and tenacity, develops these characteristics by exercising them, while one who never has had to depend upon his own efforts is very apt to be indolent and timid. Since this biological principle is such an important one in the development of all mental and physical characteristics, it would seem not improbable that it may have played a part in developing the characteristics which dominated this patient's life.

But how could an emotion, such as fear, be developed from use? Our conception of the nature of emotion helps us here. We regard fear as the affective aspect of an instinctive process, it is the feeling which accompanies the instinctive impulse to shrink from anticipated injury. Now, we can easily see how this shrinking or flight tendency might be developed through use and how as a result the tendency to its accompanying affect of fear would also be increased. To account for an excessive development of the fear tendency, we have merely to account for an excessive development of the flight instinct. Let us see what conditions would bring this about.

To all the difficulties which man encounters there are, broadly speaking, two possible types of reaction. One is the reaction of attack, in which he strives to overcome the difficulty; the other the reaction of shrinking or flight, in which he tries to avoid it. In one case, he makes use of what McDougall calls the instinct of flight; in the other, of the instinct of pugnacity. The ordinary conditions of life necessitates the exercise of sometimes one, sometimes the other, of these two instincts. There are difficulties we

cannot overcome and before which we are obliged to give way, no matter how distasteful such a course may be to us. There are certain difficulties we cannot escape and here, like the rat driven into a corner, we fight because we must. Hence a man living in an environment where the instinct of pugnacity is necessary to him, develops it by use and so adapts himself to that environment. But if one were so situated that he could escape from every difficulty, he might make use of the flight instinct exclusively, with the result that in time it would become very powerful, while pugnacity, its counterbalancing instinct, would not be developed at all. And this condition would be brought about by the operation of those agencies which produce normal adaptation to environment; indeed, so long as it remained possible for him to escape from every difficulty satisfactorily by shrinking, the development of this instinct would constitute a satisfactory and perfectly normal biological adaptation. Our patient probably grew up in an environment such as this. He grew up in a home where, thanks to an indulgent mother, he was able to adjust himself to practically every difficulty by means of a shrinking reaction. For example, as a boy he was able to escape his difficulties at school by playing truant. When he became a man, he was still permitted to depend upon the same reaction, giving up his work whenever he encountered anything unpleasant and falling back upon his mother for support. Thus, in his case the development of the flight instinct and the fear tendency which accompanied it was simply a biological process of adaptation.

And this process accounts, not only for his timidity, but also for his other outstanding characteristic, namely, indolence. It was by means of his idleness that he succeeded in escaping from his difficulties. Whenever he took up work or activity of any kind he encountered things which were unpleasant and which alarmed him, but he was able to escape from them merely by becoming passive; escaping his difficulties at school by playing truant and idling about the streets; later escaping the difficulties in his work by giving it up and remaining idle at home. However, as his habits of idleness became more fixed, he felt less inclined to exert himself, even under conditions where he felt no alarm.

But, in the environment in which he was placed, other types of adaptation were open to him beside shrinking and passivity. Why



did he select this one? His brother, who presumably grew up under the same conditions, reacted quite differently. Evidently there were other factors which played a part. What they are we shall not attempt to discuss at any length, but there are two that it might be well to mention.

Inherited make-up was probably a very important one. The patient probably began life with rather strong tendencies toward indolence and timidity, and being given an environment to which he could adjust himself by the exercise of these tendencies, he did so; whereas, one of a different make-up would have adjusted himself in quite a different way.

It is probable that masturbation also played a part, operating in at least three different ways:

First, it furnished a constant stimulus for his fear instinct, giving him a feeling of shame and inferiority in the presence of his fellows which made him shrink from them and feel incapable of holding his own in competition with them. It likewise caused him to feel great concern over his health, making him think he was physically unfitted to cope with hardship and therefore predisposing him to shrink from it wherever possible.

Second, it predisposed him to indolence, because it gave him in auto-eroticism a source of gratification which served as a substitute for that which he would otherwise have been obliged to seek in more normal forms of activity.

Third, it was a considerable drain on his physical strength, thus making him less inclined to exert himself and deal with his difficulties in an aggressive way.

But, whatever other factors may have been present, the development of shrinking and passivity constituted a biological adaptation, by means of which he was able to get along until the approach of manhood, when a new impulse was introduced for which it was inadequate. His type of adaptation did not give the impulse necessary outlet and a psychosis was the result.

Before attempting to carry our analysis any further, it will be necessary for us to discuss the nature of the process of mental adaptation in a little greater detail. At the outset, we assumed that man had been given a certain capacity for adjustment, in order that his instincts might be used to meet his varied and complex requirements; and that the process of adjustment consisted of a

modification of the instinctive reaction on its cognitive side, so that the stimulus afforded by any situation might be carried to the instinct best suited to deal with it; and a modification of the same process on its conative side, so that the impulse coming from the instinct might be directed into that channel of activity which would afford the most adequate reaction possible. Now, each time the individual adjusts himself to a situation in a certain way, that is to say, each time he directs the forces which are the source of mental activity into certain channels, he tends to deepen these channels, so that on each succeeding occasion stimulus and impulse show an increased tendency to follow the same course and thus give rise to the same type of reaction. This tendency, which underlies all habit formation, is simply one manifestation of that fundamental mechanism of biological adaptation to which we have already referred; namely, the tendency for those parts and functions to develop most which receive the most use. The individual makes use of those channels for his impulses which he finds useful, which prove adequate to his needs, and, as a result of this use, he develops them, opens them up, so that as time goes on he is able to make the adjustments in which they are used with constantly increasing facility.

This process, however, has its limitations. The organism does not retain, unimpaired through life, the ability to adapt itself to changing conditions as they may arise; habits once formed, channels once opened up, tend to persist, and, as time goes on, it becomes progressively more and more difficult, both to prevent impulses from finding outlet by their accustomed paths, and to open up new paths. This progressive decrease in the plasticity of the mind, this lessening of the ability to adjust to new conditions which goes on with advancing age, is familiar to all. It is as if the organism were allowed to make one adaptation, to mold itself once to its environment, and ever after must remain committed to the type of adaptation then made. This progressive lessening of the capacity for adaptation is probably due, to a large extent at least, to physiological changes in the underlying brain tissue. As time goes on the brain hardens. In the words of William James, it slowly sets like plaster in the form into which it has been molded in the early formative period of life, thus becoming gradually

less capable of undergoing those alterations in structure upon which mental adaptation depends.

In view of these facts, it is essential that the individual should develop from the beginning a type of adaptation that will prove adequate, not only to the needs existing at the time when the habits are being formed, but also to those which are likely to arise later. This the patient had failed to do. The needs to which his type of adaptation proved inadequate were those arising out of the development of the sexual instinct. Since the purpose of this instinct is to impel the individual to perform the function of reproduction, and since it is not intended that this function should be exercised during childhood, the sexual instinct does not awaken to its full activity until the individual approaches maturity.<sup>8</sup> When, therefore, with the approach of manhood this awakening took place, the patient had already developed a type of adaptation which rendered it impossible for him to give these new impulses an adequate outlet. As a result of this, they were dammed back and forced into undesirable channels, giving rise to forms of thought and action which constituted a psychosis.

The seriousness of the results to which the misdirection of the sexual impulses gave rise was increased by certain factors in the patient's environment and manner of life which stimulated his erotic desires to an unusual degree. It will be remembered that when he was 18, a young woman, Miss X, had come to live with his family and that he had fallen in love with her, and, although she had refused to marry him, she had remained in the same house, permitting him to fondle her and continuing to be a source of sexual stimulation to him; that, when he was 21, another woman, Mrs. Y., had begun to visit the house and had exerted herself to arouse his passions, and that he had taken many liberties with her although they had never actually had sexual intercourse. Now, since he was living a life of idleness, with nothing else to occupy his mind, he had given himself up continually to the

<sup>8</sup> Although Freud and his followers lay great stress on the sexual activity of infancy and early childhood, it must be borne in mind, that Freud attaches to the word sexual a much broader meaning than that generally given it. I prefer, with McDougall, to use the word in its more restricted sense (see William McDougall, *The Definition of the Sexual Instinct*, Proc. Royal Society of Medicine, 1914, Section of Psychiatry, pp. 65-78).

sexual ruminations which the presence of these women had aroused, with the result that, from the age of 18, his sexual instinct had been continually subject to strong stimulation.

The impulses arising when an instinct is stimulated must find outlet in some kind of a reaction. Let us see what outlet they found in the present case, in other words, what adjustment the patient made. His first reaction appears to have been quite normal. At the age of 18, on falling in love with Miss X., he went to work as a chauffeur, hoping as he tells us, to place himself in a position where he would be able to marry. But the habits formed in boyhood proved too strong for him. In his work he encountered things that were hard and disagreeable, and at such times he was unable to resist the impulse to react in his accustomed way, stopping work and falling back on his family for support. After giving up three or four different positions in this way, he became completely discouraged, made no further attempt to become self-supporting but relapsed into his old habits of idleness. Thus his type of adaptation, which rendered possible only one type of reaction to his difficulties, namely, that of shrinking or flight, prevented him from finding outlet for his sexual impulses in the most normal way. He must, therefore, find some other outlet. What other outlet was available? He might have attempted to seduce the young woman or have gone with prostitutes, but here his timidity held him back. His strongly stimulated sexual appetite, therefore, groping around for some means of gratification, caused him to turn to the whiskey bottle, vaguely striving to find in the gratification of one appetite the satisfaction that was denied him in the other. Thus we find him at the age of 18, shortly after Miss X. had come into his life, drinking to excess. He was able to repress this tendency after a time, but a couple of years later the new sexual stimulus resulting from the advent of a second woman, Mrs. Y., with the increased demand for sensual gratification to which her presence gave rise, drove him back to his old habit and he continued to drink heavily almost up to the time when he came to the hospital. It is fairly certain that during this time he also sought to find outlet for his sexual impulses in the habit of masturbation.

But the sexual impulses which, in spite of his various forms of self-indulgence, did not find sufficient outlet, flowed over into his

fear instinct, stimulating it to activity. There is nothing surprising or unusual about this phenomenon. It occurs normally in the bashful and highly sexed individual who feels frightened and panic-stricken in the presence of the other sex. It also occurs in the psychoneuroses, where repressed sexual impulses frequently produce conditions of fear and anxiety. It was therefore to be expected in a man like the patient, whose habits of life had been such as to develop a tendency to the fear reaction. There is little doubt that even during adolescence his inhibited sexual impulses had stimulated his fear instinct to some extent, but it was not until the age of 18 that this fear assumed a distinctly pathological character.

Let us see how this increased activity of the fear instinct manifested itself.

First, it manifested itself in increased activity of the cognitive or afferent part of the instinct. As already stated, the cognitive mechanism picks out those things suitable for the instinct to react to. It causes the individual to observe and pay special attention to them, and on perceiving them carries a stimulus to the instinct, thus causing it to become active. Now, the psychic tension caused by the stimulation of any instinct reacts upon this cognitive part, increasing its activity, making it more sensitive, more easily stimulated. There is an increased tendency to observe, to pay attention to and react to those things which stimulate the instinct. For example, if the fear instinct is stimulated, there is an increased tendency to look for possible danger in every situation. The individual starts at any noise or at anything unfamiliar. Every instinct when stimulated shows this increased activity of its cognitive mechanism. It was, therefore, to be expected in the present case and as a matter of fact all the delusions and hallucinations can be traced to it.

In the first place, this increased sensitiveness to fear stimuli made him react to trifles that ordinarily would not have concerned him at all. For example, at the age of 18, the sight of a trifling street accident suggested to his mind the possibility of some member of his family being injured in a similar way, and so we find him worrying over this possibility and warning members of his family to be careful when going on the street. At another time, a chance reference to the high cost of living was enough to



start him worrying over household expenses; then the thought that his brother who worked on a boat might be drowned frightened him and on one occasion, when induced to take a trip himself, he was in great terror during the whole voyage. It is evident that what we have here is merely an increased tension in the fear instinct, causing a lowering of the threshold of excitability, so that the cognitive mechanism reacts to what would ordinarily be subliminal stimuli.

But he also reacted more vigorously than he otherwise would toward those things regarding which he was justified in feeling some anxiety. It is probable that from boyhood he had felt much anxiety over his habit of masturbation. He admits that his fear of doctors had grown out of the idea that there might be something in his appearance by means of which a doctor would know that he masturbated and, knowing it, he might want to perform some operation upon him, perhaps remove his testicles. His timidity and bashfulness was partly due to the fact that he feared others might suspect him of this habit and his concern in regard to his health to the belief that he was doing himself serious harm by indulging in it. With the increased sensitiveness to fear stimuli, his concern over these things became much more intense and was still further augmented by his family, who tried to frighten him out of his auto-erotic habits by telling him all the horrible things they could think of regarding their ill effects. So his fear of doctors and operations now became much more pronounced; he shrank more than ever from the attention of his fellows; he thought they saw what a bad state he was in and made remarks about him. Out of this grew his concern over his eyes; he believed that if a man masturbated his eyes showed it. His family strengthened this idea by accusing him of having practised self-abuse whenever his eyes looked tired in the morning, and it was therefore not surprising when, shortly before coming to the hospital, a bird pecked him in the eye and he was told that a bird's bite was dangerous, that he should begin to show great concern, put boric acid and other things on his eyes and to think that something serious was wrong with them. As a result of his nervous tension, he was now eating and sleeping poorly; his health was failing. This also became a source of anxiety. He was smoking

and drinking to excess and felt unable to check himself—more ground for anxiety; he feared he might get delirium tremens.

An idea that seems a trifle odd at first, although it is easily accounted for, is his fear that people might accuse him of rape. This began with his desire to have intercourse with Mrs. Y. and his brother's warning that to do such a thing would be dangerous. Every time he came into her presence his sexual instinct was stimulated and he felt an impulse to gratify this desire, but at the same time he had a feeling of fear, for the sexual impulses to which her presence gave rise, finding no immediate outlet, stimulated the fear instinct and, naturally enough, the fear aroused at these times expressed itself in a dread that he might give way to the erotic impulses, which occurred at the same time, and thus get himself into trouble. It was this dread that prevented him from gratifying his desires. His sexual impulses, by stimulating his fear, caused an inhibition, a drawing back, which automatically blocked their own channel of outlet. Out of his fear of getting himself into trouble by making a sexual assault upon this woman grew the fear that she might accuse him of rape, even though he were innocent. This idea having once formed in his mind, he began in his terror to extend it to other women, especially to those who excited his sexual desires. Thus he came to fear that women he happened to notice on the street might make charges against him. He had already developed the idea that people noticed him and made remarks about him because of his bad physical condition and his habit of self-abuse. He now came to think that they also suspected him of rape.

After his fear had attained a certain degree of intensity he commenced to hear voices. Apparently these voices only gave expression to two ideas, his concern regarding his health and his fear of being accused of some sexual crime. They were, therefore, merely a very vivid expression of his own thoughts and were due to the intensity of the underlying emotion. They disappeared as soon as his fear had somewhat subsided. As we do not intend to take up the mechanism of hallucinations in connection with this case, they need not be considered any further.

Thus we have succeeded in tracing all the delusions and hallucinations to the activity of the fear instinct, although it was shown that the sexual impulses, which were the forces activating the

fear, colored the picture to a certain extent. And one might again emphasize the fact that what is seen here differs only in degree from what occurs in the normal; that every instinct when stimulated tends to express itself, in its cognitive aspect, in an increased tendency to pay attention to those objects and ideas which bear some relation to it or to consider any object or idea in its relation to that instinct which is strongly stimulated at the time. Thus the small boy returning home after dark, having had his fear stimulated by gruesome tales, will see horrible shapes and sources of danger in every familiar object along his path. Stimulation of the sexual instinct calls up libidinous fancies and the thought of past sexual experiences that have lain forgotten until then. At such times trifles which ordinarily we would disregard will suggest things sexual to us. The same is true of disgust, anger, all our instincts; when stimulated they always give rise on their cognitive side to tendencies such as this. Now, this is a psychological mechanism which, within normal limits, serves a very useful purpose. In the first place, the ideas aroused, themselves serve as a stimulus to the instinct and so help to keep it active until it has fulfilled its purpose. In the second place, it calls up to consciousness those ideas and memories which the mind must make use of in fulfilling that purpose. For example, fear automatically calls up into consciousness the thought of all those possible dangers which the individual must shun and which it is therefore important that he should bear in mind when anything occurs to arouse his fear. In the same way the stimulated sexual instinct, in arousing erotic ideas, merely calls up those thoughts and memories which the mind must make use of in seeking an outlet for its impulses; in other words, it calls up those thoughts and memories that will suggest ways of gratifying its desires. But when an instinct is so strongly stimulated that it carries the activity of the cognitive mechanism beyond the "critical point," we have hallucinations and delusions resulting. We err if we suppose that all delusions express the fulfilment of a wish; that they are called up as a source of pleasure to the patient or as a means of escaping from unpleasant reality. Such an explanation will neither account for the normal cognitive process nor the abnormal, which is only an exaggeration of the normal. The small boy who sees horrible shapes in every bush and tree does

not see them because these things are any more pleasant to him than the reality, and no more did our patient in the present case when he thought he was to die or be arrested. There is no doubt, however, that in many cases pleasure and pain play a very important part in the development of delusions, because here, as well as in all forms of mental activity, these factors exert an influence, prolonging those reactions which are pleasant in their results and cutting short those which are unpleasant.

But although the activity of the fear instinct manifested itself in its cognitive part in the way we have described, this did not relieve the tension. It did not give outlet to the impulses generated in the instinct. Indeed, as has been pointed out, the purpose of activity such as this is not to relieve instinctive tension, but rather to increase and prolong it, until it gives rise to some form of conation adequate to the needs of the organism. The patient's delusions and hallucinations only served to increase the intensity of his fear. His impulses must therefore find outlet in some form of conation. They must modify his conduct in some way. Now what modification of his conduct should we expect in the present case? To answer this question, let us begin by considering the different types of behavior to which fear may give rise. These are more clearly seen in animals than in men. Let us, therefore, consider different ways in which animals react to fear. Broadly speaking, there are three fundamental types of reaction.

First, flight, in which the animal attempts to take himself out of the reach of the danger.

Second, attack, in which the fear impulse flows over and stimulates the anger with its accompanying reaction of attack. We see this reaction, even in timid animals, which will fight fiercely when driven into a corner. We have ourselves felt it in the impulse to strike out and become angry if anyone comes upon us suddenly and startles us. In this reaction the animal endeavors to protect itself from harm by driving off or destroying that which would injure it.

Third, passivity, which manifests itself in an inclination to remain motionless when frightened. Animals make use of this reaction quite as much as of either of the other two in escaping their enemies. Many animals, particularly those with protective coloring, are comparatively safe, even when within easy reach

of an enemy, so long as they remain motionless, but if they move they at once attract attention to themselves and are very likely to be captured and killed. Thus it is that fear in such animals tends to inhibit all movement. But all animals use this reaction on occasion and all therefore have this tendency to become motionless when frightened to a greater or less extent. Even man has it. We all know what it is to fear to move. Many of us know what it is to be paralyzed from fear; to have our legs give way under us; to be unable to articulate; to be frozen stiff with terror. This evidently is an instinctive passive reaction to fear analogous to what occurs in the lower animals.

Now, what are the factors that determine which of these three types of reaction, flight, attack or passivity, all of them equally instinctive, the individual will make use of on any given occasion? We shall consider three factors which appear to have played a part here and trace their operation in determining the patient's type of reaction.

The first is the intensity of the fear, or rather of the instinctive impulse underlying the fear.<sup>4</sup> Slight fear impels either to flight or attack; intense fear is more apt to produce a passive type of reaction. In other words, slight fear produces a reaction characterized by increased motor activity, while intense fear is more apt to produce one characterized by diminished motor activity. We know this from personal experience. With slight degrees of fear we are anxious, restless, cannot keep still. It is only when our fear is intense that we are impelled to remain motionless or find ourselves paralyzed, unable to move. This rule, which probably applies to animals as well as men, clearly works out in the majority of cases for their preservation. For example, if an animal sees an enemy when it is still a long way off, it is clear that the best reaction is flight, for there is still plenty of opportunity to get out of the reach of danger, and, as under such circumstances the fear is not very great, this is the reaction it is most likely to use. Again, if its enemy is so close as to render escape impossible, but

<sup>4</sup> Fear being simply the affective aspect of an underlying impulse to escape, it is probable that the strength of this impulse and not of the resulting fear helps to determine the type of reaction. However, as the intensity of the fear varies with the strength of this impulse, the results are, for practical purposes, the same as if the fear itself really were the determining factor.



is little, if any, stronger than the animal itself, resistance offers the best hope of self-preservation, and, as under such circumstances escape is impossible and the fear not sufficiently intense to lead it to adopt the only other alternative, namely, passivity, the attack reaction is the one it is most likely to adopt. But if the enemy be so close that escape is impossible and so powerful that resistance is useless, then the only possibility of escape lies in the animal remaining motionless on the chance that it will escape notice and as under such circumstances the fear will be very intense, this is the reaction most likely to be adopted. Thus we see that the intensity of the fear, automatically as it were, leads the animal in the majority of cases to select the most desirable type of reaction.

The second factor will be the innate tendency of the individual. Every individual, whether animal or man, will have a predisposition toward the particular type of reaction which he has come to use habitually, either from force of circumstances or from constitutional tendency. This type of reaction he will use wherever circumstances make it possible.

The third factor will be the intelligence of the individual, which modifies his reaction to fit the circumstances of the case. We are in error if we regard our choice of a certain path of conduct as due to this factor alone; nevertheless, it undoubtedly does play a very important part, both in man and the higher animals, in determining which of a number of forms of behavior, all of them basically instinctive, the individual will make use of on any given occasion. A man or an animal is impelled to run away from danger where he sees some possible avenue of escape, whereas if he sees none he may feel no impulse to do anything but remain passive.

Now, how did these three factors operate in the patient's case? What type of reaction did they lead him to adopt? The first factor was the intensity of the fear. We know that the patient's fear was of gradually increasing intensity. One would therefore expect that at first, when it was only slight, he might have shown some tendency toward an active type of reaction, but that as it increased in intensity, his motor activity would diminish and his reaction pass over into one of passivity. Regarding the second factor, namely, predisposition toward a certain particular type of

reaction, we know that he habitually reacted to his difficulties in a passive way, getting out of them by giving up all effort and becoming inactive. We should therefore expect a marked predisposition toward this type of reaction in the present instance. The third factor was the individual's intelligence, the circumstances of the case, the tendency to flight or attack depending upon whether he saw in either of these any hope of escape. In the present case the patient saw no hope in either of these directions. He felt himself utterly unable to check his bad habits or escape their consequences. The things he feared he could neither overcome nor run away from, and so there was nothing in the situation to counteract his tendency to inactivity.

Thus from all of the three factors which we have considered, we would expect the reaction to be of the passive type, with perhaps at the beginning, before the fear became very intense, a slight tendency to the active type. And this appears to be exactly what occurred. The patient himself says that at first he was more active than formerly. He noticed that he walked faster than was usual with him; that he could not keep still. This restlessness which everyone is familiar with as accompanying a vague feeling of apprehension, probably represents a slight tendency toward the flight reaction. He also states that at this time he was more irritable and quarrelsome than usual—evidently a slight tendency toward the attack reaction. But as the fear became more intense the tendency toward the passive type of reaction became more marked. He became more and more sluggish and finally sank into a state of complete inactivity.

We are therefore led to suppose that the so-called stupor was in all probability a reaction to fear of the passive type. When we come to consider the nature of the stupor, we are confirmed in this view. In the first place, the patient was clearly conscious and after his recovery showed a good memory for all the events which occurred during this period. This is what might be expected in a state of inactivity induced by fear, but not what we would expect to find in a stupor such as would be produced by some toxic condition. In the latter case, there would be clouding of consciousness, and, as a result, very poor memory for the time of the stupor. In the second place, if our theory is correct, we would expect his mood to have been characterized by intense fear. His statement

shows that this was actually the case. He says that while apparently indifferent to all that went on about him, he was really very much frightened. He was frightened at being dragged away to a hospital for mental diseases. He was afraid of the doctors and attendants and what they might do to him. He was much alarmed on account of his physical condition and believed he would never see home again. He retained his old delusions and the voices continued to accuse him of rape, but when his fear abated and he began to improve these voices and ideas ceased to trouble him. This was what we might expect, for we know that these things were produced by his fear, and, therefore, would expect them to last only as long as the fear lasted. We also find that his own explanation of his inactivity supports our theory. He says that the reason he remained motionless was because he was afraid to move. He was afraid to put out his tongue lest someone might give him an "uppercut," or to move in any way lest he put himself in a position where someone might take advantage of him. He held himself quiet in his terror, fearing he might go wild and be put in a straight-jacket. In this connection his statement that he moved more freely with one particular attendant, because he knew him better and because this man was always very gentle with him, and therefore alarmed him less, is of considerable value.

Now, as to the course of the stupor: Being placed in a hospital, away from the source of his sexual stimulation and the intensity of his fear distracting his mind from his sexual ruminations, the sexual instinct became less active and ceased to be a source of stimulation for his fear. Then as time went on without any harm befalling him, and as he became familiar with his environment, this also ceased to inspire him with fear. The imaginations which had previously frightened him gradually faded out, and, as his fear diminished, he again began to display motor activity, in time returning to a comparatively normal condition. All this took place very slowly however, for he had been inactive so long that the habit had become fixed. His sluggish tendency had been increased so that, even after his fear passed off, he felt very little inclination to move. After his prolonged inactivity the mere idea of moving frightened him; it was so unfamiliar. He felt safe and comfortable while quiet, therefore preferred to stay quiet.

He remained mute after all other forms of motor inhibition had passed off, and this also was to be expected. Fear will produce an inhibition of the vocal apparatus when it is too slight to affect any other motor function. This is seen in the small child, who cannot be induced to speak in the presence of strangers; in the school boy, noisy enough on ordinary occasions, but scarcely able to lift his voice above a whisper when required to answer a question in the classroom; in the man, whose voice fails him when he attempts to address an audience. This marked tendency to become mute through fear is found in both animals and man. It is clearly a protective mechanism and owes its existence to the fact that nothing is so likely to attract to an animal the notice of its enemies as the sound of its voice. The patient spoke first in the presence of his brother and the attendants he knew best, because he felt the least fear in their presence; last of all to the physicians, because of them he felt the most fear. It will be remembered that he had always been very much afraid of doctors. His own explanation of his behavior again supports our views. He states that he remained silent because he felt a little nervousness and tightness in his throat.

The abnormalities of conduct observed in this case are therefore all adequately explained by the activity of the conative part of the instinct. His conduct was simply the exaggeration of a normal type of instinctive behavior.

His conduct since recovery from the stupor is again what might have been expected. The tendency to passivity, which he had developed, made him willing to remain indefinitely at the hospital without any occupation. Moreover, his fear made him shrink from leaving its shelter and going out into a world now grown unfamiliar. On going home after being discharged from the hospital he became nervous and had to return, partly because old associations and the old stimuli again awakened his sexual and fear impulses; for instance, the thought of Mrs. Y., who had formerly proven such a stimulus to his sexual instinct, kept him in a state of apprehension lest she come into the house; also, owing to his long stay in the hospital, the home environment had become unfamiliar, and anything unfamiliar tended to frighten him. In his hospital life he has displayed this same tendency to shrink from the unfamiliar. Every change, however trivial, appears to

alarm him. For example, after being on one hall for a time, he was much frightened at the idea of being transferred to another part of the hospital, and it was almost necessary to use force in order to induce him to move.

As time goes on he is steadily growing duller and more inactive, and understanding the mechanism of his psychosis as we do, we can easily see the reason for this. After his fear subsided the sexual ruminations, which had been crowded out of consciousness by the intensity of his fear, again asserted themselves. The sexual instinct, therefore, has again become active and again, for the same reason as before, fails to find adequate outlet and so stimulates the fear. However, this time the stimulus is not very intense and the patient is not plunged into another stupor. Instead, there is merely a slight degree of inhibition, which makes him more inactive, less inclined to speak and causes him to draw more and more away from the outside world and from all forms of healthful activity. A vicious circle is thus established, his fear keeping his sexual impulses dammed up and inhibiting all those forms of activity which would have enabled him to escape from his sexual ruminations; these in turn being kept active by the repressed sexual impulses, reacting on the cognitive part of the instinct,<sup>5</sup> the tension in the sexual instinct then stimulating the fear. Thus we see that the forces within him automatically cut off their own channels of outlet, and, by continually impelling him to draw away from all stimuli, cause him to contract rather than to expand. The forces at work are probably not very powerful, but they are continually active, and, as a result of their action, his interests and activities become narrower and narrower. There is nothing to break the vicious circle. His mental powers atrophy from disuse. His consciousness is kept focused on thoughts with an erotic or fear coloring; his store of ideas becomes steadily more

<sup>5</sup> It has been pointed out by McDougall that the persistent, self-sustaining character of instinctive "activity" may result from a circular reciprocal action, the instinct being excited by way of an idea and the instinct then playing back on the idea, holding it before the mind (William McDougall, *The Sources and Direction of Psychophysical Energy*, *Am. Jour. Insanity*, 1913, special number). This process appears to explain in part the continued activity of the sexual instinct in the present case.



distorted and impoverished, and a progressive dementia is the inevitable outcome.

At the outset, the theory was offered that mental disorder was due to failure to direct the instinctive impulses, which are the source of all thought and action, into satisfactory channels, and the preceding analysis was undertaken merely in order to show that this theory would furnish a satisfactory explanation of all the facts in a rather complex case. Let us now review our analysis in brief outline and see if we have accomplished this purpose. We found that the psychosis had its beginning in the development of an unsatisfactory type of adaptation. By adaptation is meant the changes in structure which every living organism tends to undergo in order to become fitted to live in the environment in which it is placed, these changes being brought about by the tendency of those parts and functions to develop most which receive the most use. Our patient was placed in an environment in which he could adjust himself to every difficulty by shrinking from it and becoming inactive, and, probably being predisposed to this type of reaction to begin with, he made use of it on every occasion and so developed it to a marked degree. The development of this characteristic was therefore merely a biological process of adaptation. But it was pointed out that the process of adaptation, although of great value to the organism, carries with it a certain hazard, owing to the fact that a type of adaptation, once formed, tends to become permanent. If, after developing a certain type of adaptation, the individual should be placed in a different environment, or a new factor should be introduced into his life, requiring reactions of a different type from those which it had made possible, the changes in structure which his mind had undergone, the characteristics which he had developed, might prove a detriment instead of an aid and render him incapable of adjusting himself to the new conditions. We found that this was what occurred in the present case; the new factor introduced was the sexual instinct, which only became strongly active with the approach of maturity. It has been shown that an active, aggressive type of reaction was necessary in order to give the impulses from this instinct adequate outlet and that the patient's habits had rendered such a reaction impossible; that as a result the dammed up sexual impulses stimulated the fear, and, by doing

this, automatically cut off their own outlet, for the fear inhibited all those reactions which might have given outlet to these impulses. Therefore, the sexual impulses, remaining dammed up, simply stimulated the fear instinct still further, and it was this continued activity of the fear instinct which gave rise to the symptoms of the psychosis. The hallucinations and delusions were due to the activity of its cognitive part, being shown to be merely an exaggeration of a process which occurs normally whenever any instinct is stimulated. In the same way, the peculiarities of conduct were an exaggeration of a normal instinctive type of conation and one to which the patient's type of adaptation had strongly predisposed him. The so-called catatonic stupor was shown to be an inhibition due to fear. The progressive dementia following recovery from the stupor was traced to the vicious circle established between the sexual and fear instincts, the dammed up sexual impulses stimulating the fear, the fear in turn preventing the sexual impulses from finding adequate outlet and so keeping the sexual instinct active, the continued activity of the two instincts causing an inhibition of normal activity, with atrophy of the mental powers from disuse and the focusing of the attention upon ideas with an erotic or fear coloring and a resulting distortion of the processes of thought, the atrophy and distortion together constituting the process of deterioration which we call dementia. Thus we have succeeded in tracing everything in the psychosis, the extreme fear, the hallucinations and delusions, the motor inhibition and finally the progressive dementia, to the misdirection of impulses arising in the sexual and flight instincts. We have therefore accomplished what we set out to do; we have demonstrated the fact that the abnormalities observed in a case of mental disorder may be adequately explained on the hypothesis that they are due to instinctive impulses which the mechanism of adjustment has been unable to direct into satisfactory channels.

Now if it should be discovered that there was some physical disorder underlying the psychosis in the present case, there are some who would at once conclude that we must have been entirely wrong in our views regarding the psychology of this disorder. Such a view, however, would be quite erroneous. Whether we have an underlying physical disorder or not, it remains probable that the psychological processes in this case have been very much

as we have described them. As a matter of fact, it is very likely that certain physical factors did enter into it, but before we can understand the part they played it is necessary to consider briefly the relationship existing between the physical and the mental. It is now generally recognized that all mental process is dependent upon the functioning of a physical organ, the brain, and that no mental process ever takes place without a corresponding physical process taking place in this organ. This being so, we are justified in assuming that each of the psychic processes we have here found to be at work must be due to, or at least dependent upon, the functioning of an underlying physical mechanism. If we assume this to be the case, we can easily see how physical causes, by acting upon these underlying mechanisms, may modify the mental processes to which they give rise; that any physical factor, any drug, for example, which would stimulate the physical mechanism underlying fear production, might give rise to a reaction of fear, just as might the stimulus afforded by the presence of some danger. Such a drug would be alcohol. Fear is a prominent symptom of almost all mental disorders due to alcohol, and this being so, we are justified in believing that in some way or other this drug is capable of increasing the activity of the fear mechanism. Since, therefore, our patient, for a year before coming to the hospital, had been taking about a quart of whiskey a day, this toxin could scarcely fail to have produced an effect upon his nervous tissue, and so, although his psychosis was not an alcoholic one, and although the activity of the fear can be traced to other factors than alcohol, nevertheless the changes in the brain tissue due to this drug in all probability caused him to react more vigorously to fear stimuli than he otherwise would. Alcohol was therefore probably one of the factors lying back of his fear reaction. But this poison, besides increasing his tendency to fear, probably also increased his tendency to hallucinate. Alcohol evidently acts in some way upon the perceptive mechanism, making it more difficult to distinguish between the imaginary and the real. That this is the case is shown by the prominence of hallucinations in the alcoholic psychoses. Therefore, although the hallucinations in this case can be traced to the tendency which always exists for strongly stimulated instincts to give rise to thoughts and imaginations associated with them, the tendency to confuse them with the real would

be increased by the poisoning of the brain tissue, which lessened the ability to distinguish between real and imaginary. Thus it appears that an abnormal mental process may be caused by the combined action of physical and psychic causes. But even in disorders in which the etiological factors are regarded as altogether physical, a study of the mental processes to which they give rise may well prove to be worth while. For example, a study of the mental processes in alcoholic deliria enables us to understand why these cases so uniformly display hallucinations that are horrible and terrifying. The process is no doubt essentially the same as that in the case we have been considering. In the first place, the perceptive mechanism is acted upon by the drug so that the individual finds it difficult to distinguish between the imaginary and the real. He is therefore in a condition in which hallucinations may occur very readily. In the second place, the alcohol stimulates the fear mechanism, which then tends to express itself in the same way that it would if stimulated by psychic causes, namely, in the form of hallucinations and delusions of the kind which occur in these conditions. Now, if this view be correct, we can easily see why other drugs which lessen the ability to distinguish between real and imaginary, but do not stimulate the fear instinct, may give rise to hallucinations of quite a different type. Such a drug is *cannabis indica*. It produces "a dreamy, semi-conscious state, in which the judgment seems to be lost, while the imagination is untrammelled by its usual restraints. The dreams assume the vividness of visions, are of boundless extravagance, and of course vary with the character and pursuits of the individual. In the Eastern races they seem generally to partake of an amorous nature. The true believer sees the gardens of paradise and finds himself surrounded by troops of *houris* of unspeakable beauty."<sup>\*</sup> Apparently one of the effects of *cannabis indica* is to interfere with the proper functioning of those mechanisms underlying judgment and the power to distinguish between the real and the imaginary. In this way, the threshold value of those stimuli which would tend to produce hallucinations is, so to speak, lowered and any instinct which may be active at such a time will give rise to hallucinations. Amongst Orientals, the hallucinations are generally of an amorous

<sup>\*</sup> Cushny: Pharmacology and Therapeutics.

nature, probably not because the drug stimulates the sexual instinct in any way, but because the instinct was already active when the drug was taken; the tendency to erotic fancies was already present and the drug caused them to assume the vividness of hallucinations, merely because its action upon the brain tissue made it easier to mistake such imaginations for actual sensory impressions. Indeed, it is probable that Orientals, who use this drug, take it frequently when the sexual instinct is active, not only for the feeling of well-being which it seems to produce, but also as a means of gratifying the demands of this instinct. They gratify their amorous desires by the use of a drug which makes their libidinous fancies assume the vividness of actual attainment. In cases such as this, the hallucinations must be regarded as due partly to physical and partly to psychic causes. The action of the *cannabis indica*, which lowers the threshold value of the stimulus necessary to produce the hallucinations, is a purely physical cause, but the stimulus which is provided by the sexual instinct and which gives rise to the hallucination is to be regarded as just as much a psychic cause here as it is in the so-called psychogenic disorders, where it produces hallucinations without the aid of any physical agent. Thus the process of hallucination formation may be essentially the same whether the causes lying back of it are physical or mental, and even in a true drug delirium what we regard as purely psychic factors may play a considerable part. Mental disorders therefore cannot be rigidly divided into two classes, those of physical and those of psychic origin. The physical and the psychic are not to be regarded as two separate and distinct things, but merely as two different aspects of the same process, both of which must be taken into consideration if we are to have a true understanding of the nature of mental disease. Now, in discussing the action of such toxins as alcohol and *cannabis indica* upon the central nervous system, we have indicated only one way in which physical agents may modify our mental processes, but there are no doubt many others, quite different, although equally important. Indeed, it is probable that everything which affects the physical organism in any way reacts to a greater or lesser degree upon the mental organism as well. We have called attention to one physical factor which apparently played a part in the case analyzed, namely, alcohol, but there may



have been others equally important, such as some obscure glandular disturbance. But if any other physical factor did exist, it would not affect our views in regard to the psychological processes which we have found to be at work. It would be merely, as with the alcohol, another physical factor lying back of the psychic process.

Having completed the analysis of our case and having considered the various factors which may have entered into it, we are in a position to formulate our conception of the nature of mental disorder with a somewhat greater degree of precision. We base it upon the assumption that in man, as in animals, all thought and conduct are due to impulses arising in certain primitive mechanisms called instincts, the difference between the animal and the human mind lying chiefly in the latter's increased capacity for adjustment. We assume that the process of adjustment consists of a modification of the instinctive process in its cognitive or afferent part in order that the instinct may respond to the more complex and varied situations in which the organism is placed, and a modification of the process in its conative or efferent aspect, so that the impulses generated by the instinct may find outlet in the more varied and complex forms of conduct required of it.

Now, the mechanism of adjustment, although of distinct advantage to the organism, enabling it to adjust itself to situations in which it would otherwise be unable to get along and thus serving the purpose for which all biological mechanisms are intended, namely, the preservation of the race, nevertheless, like all of Nature's mechanisms, falls short of being perfect. It seldom if ever modifies the instinctive reactions in the best way possible to meet the requirements of any situation, and sometimes, as in the case analyzed, it fails entirely to fulfill its purpose, allowing the impulses to find outlet in forms of thought and action which are distinctly abnormal and which we recognize as evidence of mental disorder. Mental disorder is therefore due to the fact that the individual's capacity for adjustment is sometimes inadequate to the needs of the situation, or to state the same thing the other way around, that the situation is sometimes so difficult as to overtax his capacity for adjustment.

On the basis of this conception of mental disorder, let us endeavor to outline briefly the causes which might be expected to

give rise to it. Since mental health is dependent upon the capacity of the organism for adjustment being equal to the work it has to do, it follows that disorder must always be due to failure to maintain this relationship between capacity and needs, and that the causes giving rise to it must operate in one of two ways, either by making the problem of adjustment so difficult as to overtax the capacity or by lessening the individual's ability to adjust so that it will prove inadequate to his needs. Let us begin by considering the causes which operate by making adjustment difficult.

First, adjustment may be made difficult by causes which lie within the individual himself; by the possession of instincts that give rise to impulses of such intensity that it is difficult to control and direct them. There are certain people in whom the instinctive impulses are much more powerful or more easily aroused than in others. Such increase in the power of an instinct or such tendency to react to slighter stimuli may greatly complicate the problem of control and direction of its impulses. The more powerful the impulse, the greater the difficulty of finding a healthy and adequate outlet for it, and the greater danger of it overflowing its normal boundaries and producing reactions that are injurious to the organism. But on the other hand, since in our instincts lies the source of mental activity, it follows that these powerful impulses give not only increased capacity for abnormal activity, but for normal as well. To do great work of any kind one must have powerful instincts to provide the energy necessary to carry the work through to success, and whether one so endowed achieve unusual success or develop a psychosis depends upon his ability to adjust, to direct the forces of his mind into satisfactory channels. Thus it is that there is often but a narrow line separating genius from mental disease; that the most brilliant and illustrious families are often those most heavily loaded with insanity. All members of such families share in the possession of instincts of unusual dynamic value, but, owing either to constitutional differences in capacity for adjustment or to differences in environment which make the problem of adjustment more difficult with some than others, these same forces drive some upward to success, while in others who are unable to direct them into satisfactory channels they are dammed up, find outlet in unhealthy ways, and so, instead

of doing useful work, react upon the mind itself to distort and destroy it.

Second, adjustment may be made more difficult by a cause which lies, not in the individual himself, but in his environment; by increased complexity of the conditions to which he must adjust himself, conditions in which it is more difficult for him to find satisfactory outlet for his impulses, to satisfy his needs. Such increase in the complexity of conditions and in the difficulty of making successful adjustments has resulted from the development of our modern social system. This is perhaps best seen in the increased difficulty in dealing satisfactorily with impulses from the sexual instinct. The performance of the sexual function being of such vital importance for the preservation of the race, nature has made the instinct underlying it extremely strong, so that the individual will be unable to repress its impulses. Under primitive conditions, this fact did not present any serious complications, because there was very little to prevent a man from giving these impulses free vent. The restrictions of an uncompromising moral code or the need of slowly working his way up to a position in which he was able to support a wife and children did not trouble him. Except for a few simple restrictions, such, for example, as the necessity of keeping away from any woman to whom some other man more powerful than himself laid claim, there was nothing to prevent him from giving its impulses free outlet. But under our present conditions the case is quite different. Everyone is obliged to practise a considerable degree of self-restraint and for some, gratification of the demands of the sexual instinct in the physiological way is denied altogether. This necessitates finding outlet for our impulses in substitutive forms of activity. Thus a woman, obliged to remain single, may find outlet for her maternal impulses in nursing or in philanthropic work, while a man's pent-up sexual nature may find its only outlet in his business, in scientific work, literature, etc. Now, obviously, the problem of adjustment is more difficult where one must react in ways such as this. Indeed, it is doubtful if, with any normal individual, adjustments such as this are altogether successful if there is not always a certain degree of dissatisfaction and unrest, showing that he has not found in these channels complete and adequate outlet, and there are no doubt many people who would have been able to get along quite

satisfactorily under more primitive conditions who here fail completely. They are either unable to inhibit their impulses and so commit acts which bring them into conflict with society and cause trouble to themselves and others, or, if these impulses are repressed, they find outlet for themselves by unhealthy ways and mental disorder of some kind is likely to be the result. We cannot say that those who fail to adjust under these more complex conditions are of necessity defective or abnormal in any way. Nature, by a process of selective breeding, develops in any race those characteristics and that capacity which it needs in order to get on in the conditions under which it must live, thus producing a race which is adapted to its environment. Now, since the human race lived until recently under much simpler conditions than it does at present, a type was produced suited to those conditions and with the characteristics and the capacity for adjustment required in that environment, and those who to-day breed true to type, who display the mental structure by means of which their forbears were able to adjust themselves, cannot be considered abnormal or defective. The failure to adjust must be attributed, not to developmental defect, not to departure from the normal in the individual himself, but to a rapid change in conditions, necessitating different characteristics and a wider capacity for adjustment. The result of the changes in the conditions under which we live has been that only the more fortunately constituted members of the race are now able to respond to the new demands made upon them and as the conditions become more complex, as the difficulty of directing the forces of our minds into satisfactory channels becomes greater, more and more find their capacity inadequate to their needs and the amount of mental disorder increases.

Let us next consider the other factor in mental disease, namely, the poor capacity for adjustment. This may be due to one of three causes.

First, it may be due to constitutional defect; to the fact that the individual is born with an inferior or defective mechanism of adjustment, which means simply an inferior capacity for directing and controlling the instinctive impulses. There are certain people in whom these forces are not unusually strong, but in whom the mechanism by which they are directed and regulated is defective. Such defect may occur in one whose general level of intelligence

appears to be up to the average, and may show itself only in decreased ability to deal with situations of a certain kind, or it may occur in one who is in every way of low intellectual level. Such lessened capacity for adjustment obviously means greater tendency toward mental disorder, and probably a considerable proportion of those who ultimately become insane are defective in this way to begin with. They differ, however, from the preceding type which we regard as predisposed to mental disorder, viz., those with whom the difficulty is due to unusual strength of the instinctive impulses, in that while the former, under favorable conditions, are capable of rising above the average, the latter are subnormal even at best. Their danger lies, not in the possession of dynamic forces which lift them above their fellows, but in an inferior regulating mechanism which places them below. The defects which these individuals display are not in every case of the same kind. In some we have simply individuals of rather low grade; they are not abnormal; they simply belong to the class, already referred to, which probably would have been able to adjust successfully under more primitive conditions. Others are to be classed with the congenital anomalies, such as club-foot and other physical defects, which occur occasionally without any apparent cause, while there are still others in whom the defect can be traced to some physical disease, such as syphilis, in the parent stock.

Second, inferior capacity may be due to defective education. A man's capacity for adjustment depends largely on whether the training he has received and the habits he has formed in early life have been such as to fit him to deal with his problems in the best way he is capable of with his inherited make-up. The importance of this factor and the bad results that may follow from the development of a faulty type of adaptation have been shown in the case analyzed.

The third factor is the presence of some physical disorder which interferes with the proper functioning of the mental mechanism. We have already discussed the intimate relationship between physical and mental and it is not necessary to do any more than mention it here. Everyone knows how much less inclined we are to be morbid and how much easier it is to handle our instinctive difficulties when we are in good physical health and our brain cells



are functioning normally. Many so-called psychogenic disorders begin during periods of ill health, for the reason, no doubt, that at such times the capacity for adjustment is diminished and the impulses find for themselves outlet by unhealthy channels, producing a distortion of the mind which the individual may never afterwards be able to correct.

Now, if these are the etiological factors in mental disorder, it follows that the problem of dealing with it is not a hopeless one, although the hope lies, not so much in the treatment of cases already developed, as in prophylaxis; in removing the causes which give rise to trouble in the first place. These we found to be of two kinds, viz., those which make the problem of adjustment difficult and those which result in an inferior capacity for adjustment.

Let us first consider how we should deal with those which result in an inferior capacity. One of these was the presence of some constitutional defect. Now, we cannot make inferior or defective individuals over again, and therefore the only remedy open to us is to stop breeding them. We must have some system of eugenics, some way to prevent defectives from reproducing their kind. One hesitates to deny to any man the right to perpetuate his race, but modern social conditions are rapidly making this step necessary. The development of the race has been largely, if not altogether, the result of selective breeding. It has been the outcome of Nature's own system of eugenics which, although rough and cruel, has nevertheless been effective. In the struggle for existence the fittest only have survived. Those best fitted to adjust themselves to the conditions of life have crowded out the less capable, and, as a result of this, the race has, in every generation, been bred from its most desirable stock. But under modern conditions we are endeavoring to be more kind than Nature has been in the past. We are coming to protect and care for the weak. The result is that we are interfering with Nature's method of selective breeding. Yet selective breeding is necessary: without it we cannot hope to advance; we cannot even retain our present level. Therefore, if we are going to continue on our present course, to care for the unfit and so interfere with Nature's method of eliminating them, we must find something else to take its place. We have the right, nay, more, we are under obligation, to do this, not only for

the sake of the race as a whole, but for the sake of the defectives themselves; for it is no kindness to permit children to be born into a world to which they are unfitted and in which they are unlikely to find either health or happiness.

Another cause of inferior capacity for adjustment was unsatisfactory education or early training. It is important that we should give to everyone, whether normal or defective, that training which will raise his capacity to the highest possible level. The environment in early life should be such as will develop a satisfactory type of adaptation. While the mental structure is still plastic and capable of being modified by environment, those habits and characteristics should be developed which will best fit him for the situations he must encounter later. We found in the case analyzed that the psychosis was mainly due to the bad habits formed in youth; that although the patient was probably of rather poor make-up to begin with, he would in all probability never have developed a psychosis if it had not been for the bad habits which his unfortunate environment had enabled him to develop. But it is not enough to develop good habits in the child; he should also be given a knowledge of his own nature and the world in which he must live, which will enable him to handle his problems as intelligently as possible. To deal successfully with one's problems, it is not enough to be intelligent and to have normal impulses; one needs in addition to have a certain amount of definite knowledge in regard to these difficulties, and no one has been properly equipped for life who has not been given this knowledge. Many fail, not from intellectual defect or inherent morbid tendencies, but merely from ignorance of those things which it is necessary that one should know in order to direct his impulses wisely in the complex situations of modern life.

But although we succeed in raising a man's capacity to the highest possible level, there will still be conditions to which he will be unable to adjust; there will still be needs his environment must supply if he is to retain his mental health. It is therefore essential that he should be given that environment which is suited to his capacities and needs. Society is now coming to recognize its responsibility for the health of its members, and great efforts are being made to remedy the conditions which give rise to physical disease, but mental health is just as important as physical

health, and the conditions which are productive of mental disorder are just as unhygienic as those which give rise to physical disease. There is no doubt that much can be done by wisely directed effort, based on careful study of the causes of mental disorder, to improve conditions. Of course there are certain defectives who under no possible circumstances will ever be able to adjust themselves in the world at large and for whom life in an institution of some sort will always be necessary. But even with defectives such as these, an effort should be made to give the best environment possible. The institutions provided for such people should not be merely places in which they are laid away to undergo disuse atrophy of what little mental power nature may have originally given them, but rather places which will afford the greatest possible degree of freedom and which will enable them to live the most active and useful lives of which they are capable.

Let us now glance for a moment at the new field of endeavor, the new possibilities for achievement, which this conception of mental disorder lays open to us, for the problem is much broader than the mere question of the prevention and treatment of what we call insanity. There are many beside the so-called insane who have failed to adjust themselves satisfactorily. The criminal suffers from mental disorder. He is a man in whom, owing either to constitutional defect or external causes, the instinctive forces which give rise to conduct, being poorly controlled and directed, find outlet in wrong channels of activity. The same is true of the libertine, the sexual pervert, the drunkard, the gambler, the incompetent and all those whose conduct is such as to make them a burden to themselves and to society. Such people should be studied in the same way as the insane, in order to discover what defect, in themselves or in their surroundings, is responsible for the pathological conditions which they display. But even the best specimens of so-called normal individuals have not escaped altogether. In none of us is adjustment perfect. Everywhere, although in a lesser degree, we find faulty adaptations; everywhere the environment is more or less abnormal and capable of being improved, and it is this lack of harmony, this faulty adaptation, this misdirection of our impulses, with failure of our environment to meet our needs, that prevents us from enjoying perfect mental health; from getting the greatest possible satisfac-

tion out of life and rising to our highest possible level of efficiency. The work of the psycho-pathologist, therefore, extends beyond the walls of the hospital for the insane; it extends to the problem of mental disorder, wherever found or whatever its form. His work is to study abnormal mental processes; to discover what defects in the individual himself or in his environment lie at the root of these processes so that intelligent efforts may be made to remedy them; to point the way from study of the defects in our present conditions to the remedies required to raise the mental health of the community to the highest possible level, and to give to every man the greatest possible degree of efficiency and satisfaction.

## THE THYMUS AND THE PITUITARY IN DEMENTIA PRÆCOX.

### PHYSIOLOGICAL CHARACTERISTICS IN INSANITY.

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In a group of cases of dementia præcox, Abderhalden reactions were obtained in some instances to testicle and pancreas, and in others to testicle and thyroid; while in still others no reaction whatever could be obtained. In the group of individuals that gave the reaction to testicle and pancreas, certain physiological characteristics were observed. The symptoms present were leukopenia, increased blood-pressure, a feeble and rapid pulse, a temperature .2° above normal, exaggerated deep reflexes, diminished cutaneous reflexes, increased electrical reactions of muscle, tremor of tongue and extremities, an apparently good state of nutrition, the Westphal-Pilcz pupillary sign, increased mechanical irritability of the muscles and dermatographia.

This seemed to be a group of patients differing in their physiological characteristics from any other group of patients that we could observe coming under the heading of dementia præcox. We are appending a list of all the physiological symptoms that are mentioned in various articles and books on insanity (Table I). The symptoms noted in this group are only a few, compared with the total number of symptoms described in the symptom complex of dementia præcox.

We examined the bones of this group of patients with the X-ray, and found that there seemed to be less calcium in their bones than in those of the usual run of patients.

In looking over the various books on internal secretions, we found that the symptoms described as resulting in animals after



extirpation of the thymus gland were almost identical with those that we have mentioned as occurring in the patients that gave the Abderhalden reaction to testicle and pancreas (Table II). In the book of Noël Paton on "Regulators of Metabolism," there is a diagram of inter-relationships of the glands of internal secretion, which we have here reproduced with certain amplifications. The dotted lines mean inhibition; the full lines, stimulation. The direction of this activity is given by the point of the arrow. Given a hyperactivity of testicle and pancreas, which, we consider, is what is meant when one gets a positive Abderhalden reaction to testicle and pancreas, the chart is then consistent only if the thymus is underactive.

At The Johns Hopkins Hospital, in Baltimore, through the kindness of Dr. McClure, it was possible for us to secure blood, at different times, from two thymectomized animals, with controls. The dog, whose thymus had been out a year, gave a positive reaction to testicle and pancreas. The other dog, whose thymus had been out longer than a year, gave a positive reaction to testicle and spleen. None of our patients had ever given any reaction to spleen, but it is possible that a greater length of time following an operation will give somewhat different results. At any rate, both dogs and the group of six patients gave the same Abderhalden reactions (exception, spleen in Dog No. 2).

Pathologically, Parhon and Zugravu, in the *Archive de Neurologie*, November, 1913, note in dementia præcox hypertrophy of the suprarenals. Dercum and Allis (*Journal of Nervous and Mental Disease*, February, 1913) observe, also, a considerable increase in the size of the suprarenals in some cases of dementia præcox. We are appending a list of inter-relationships such as we have found (Table III), and wish to draw attention to the fact that the inter-relationship as shown by Paton's diagram is an excellent working basis for this sort of study. For instance, if we remove the thymus, then inhibition is removed from the spleen, the pancreas, the adrenals and the testicles. Please note that several authors have found in præcox hypertrophy of the adrenals; that the Abderhaldens that we obtained of the dog reacted to spleen and pancreas, as well as testicle; and that the Abderhaldens in the patients reacted to testicle and pancreas, and in Simon's cases done at the Sheppard and Enoch Pratt Hospital 95 per cent

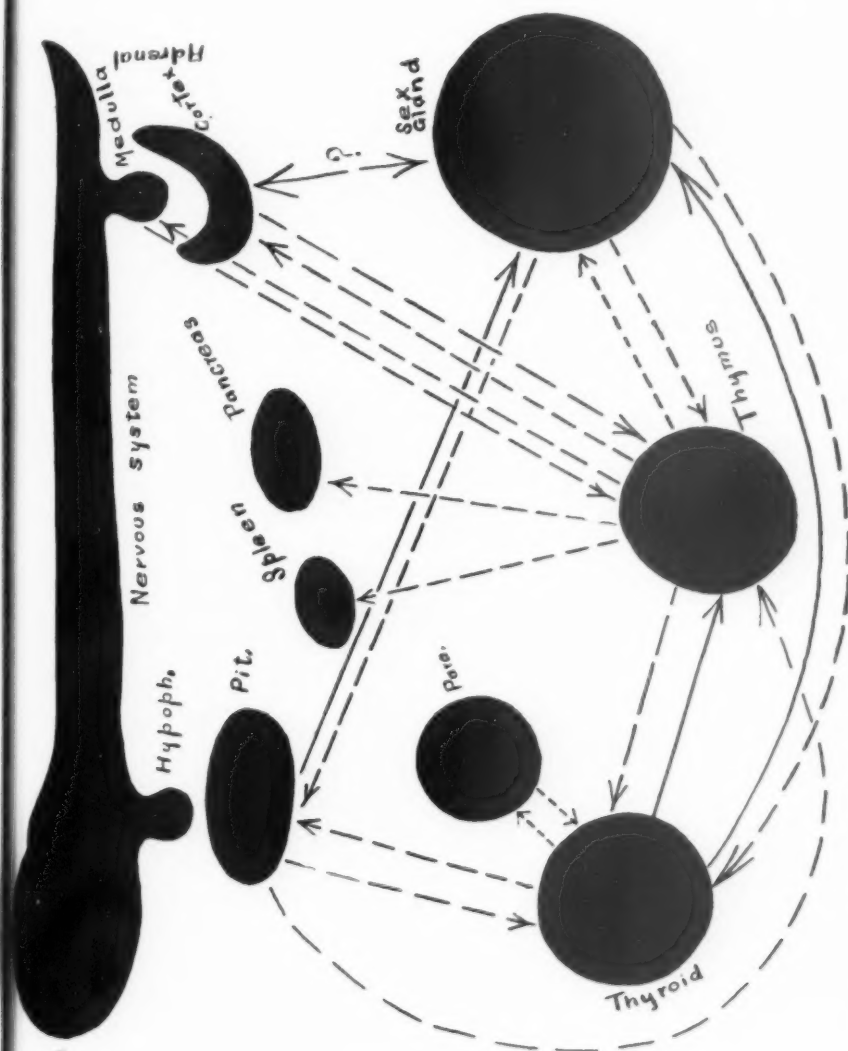


Diagram of Inter-relationship of Glands of Internal Secretion. (Modified from Noël Paton.)

at least reacted to testes. It would appear that we are beginning to arrive at a ground from which we can approach the study of these patients from a more satisfactory viewpoint than the psychological one.

Waldeyer, in 1890, insisted that thymus parenchymatous tissue remains until old age. This has been confirmed by Hammar and Lerch.<sup>1</sup> It is quite settled that there is a close relationship between the thymus and thyroid and the sex organs. Castration causes hypertrophy, while great sexual activity hastens the involution of the thymus, as in young animals, which leads naturally to the inquiry as to the effect of masturbation in producing dementia præcox. Involution of the thymus has an exhilarating effect on sex glands. We find enlarged thymus in status thymo-lymphaticus, Graves' disease and Addison's disease; and, as Halsted points out in his latest article on exophthalmic goiter, there is an increase in the relative lymphocyte count when the thymus is enlarged.

We found in our præcox cases from this thymus group that there was a relative decrease, as well as an absolute decrease, in the number of lymphocytes. All these cases showed a leukopenia. When we treated them with Lundvall's prescription of sodium nuclinate and arsenious acid by injecting under the skin, we found that we could make a leukocytosis and a relative lymphocytosis. This treatment, in our hands, did no especial good; although the theory of it may be quite correct: for Dr. Walter Jones, in his last work on "Nucleic Acids—Their Chemical Properties and Physiological Conduct," states that the only nucleic acids that we know anything about are the thymus nucleic acid and yeast nucleic acid.

We treated several of our patients with thymus-gland extract; and out of six cases, three gave excellent results and are totally well at the present time. The other cases were old and much demented, so that one could hardly expect the treatment to have very good results in them; but we believe that if a patient with the physiological symptoms mentioned above, and with a blood-pressure similar to that shown in Chart I, is treated early, a very definite result can be obtained.

In going over other cases that gave no Abderhalden reaction, we found that there was another group. They had a very low

<sup>1</sup> Med. Record, April 29, 1914.

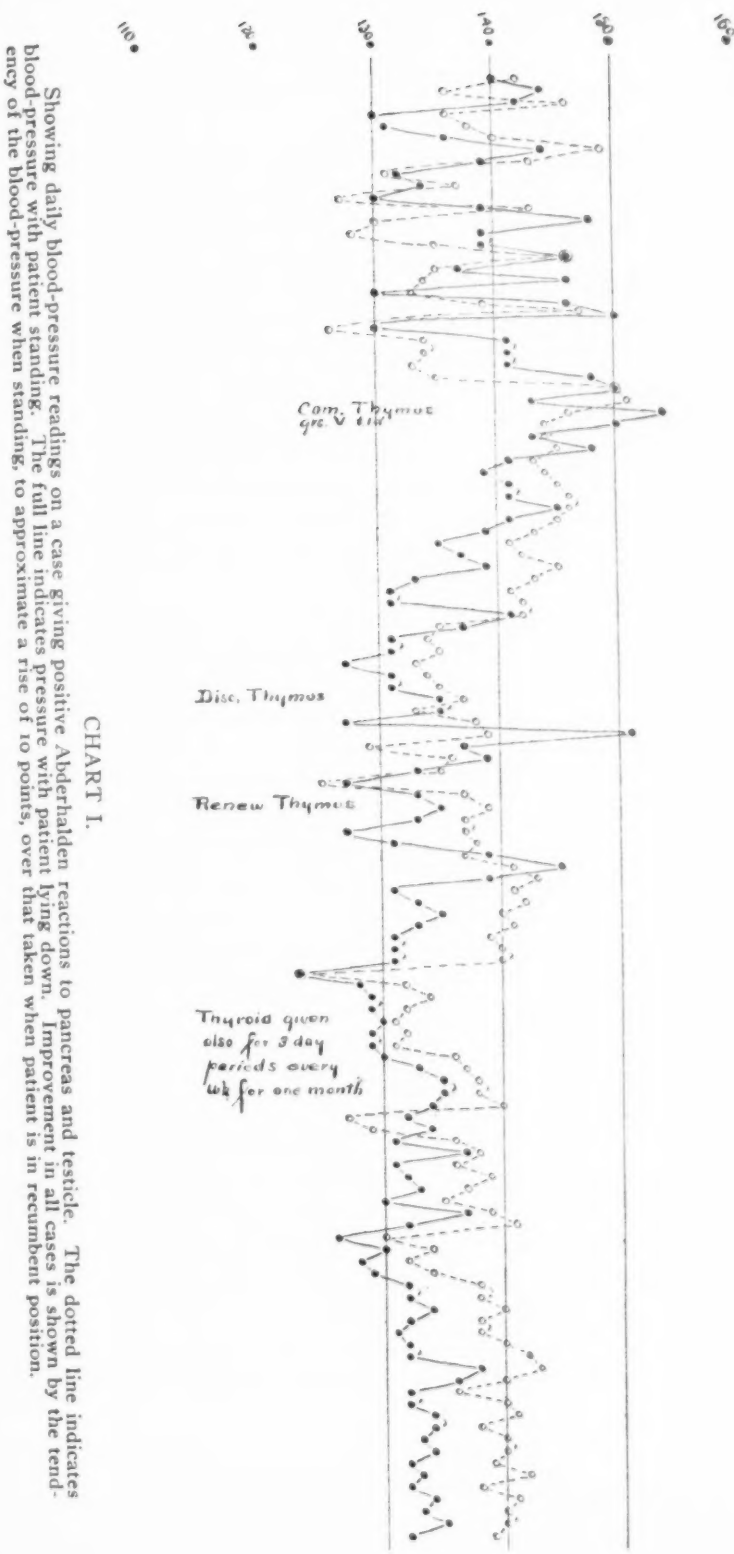


CHART I.

Showing daily blood-pressure readings on a case giving positive Abderhalden reactions to pancreas and testicle. The dotted line indicates blood-pressure with patient standing. The full line indicates pressure with patient lying down. Improvement in all cases is shown by the tendency of the blood-pressure when standing, to approximate a rise of 10 points, over that taken when patient is in recumbent position.

blood-pressure (sometimes as low as 90), such as is seen in Chart II. The pressure, on having the patients stand, went below the figure named when they were lying down—instead of rising 8 to 10 points, as it should, when they stood up. Their deep reflexes were diminished, and sometimes absent. Their temperature was subnormal—often by two degrees. There was lessened activity in electrical reaction. Pigmentation of the skin was noted. The testicles were small and atrophied; the genital hair scanty. The pulse was slow, the bowels markedly constipated. There was a history of repeated attacks of grippe or rhinorrhea. A general muscular and mental asthenia was noted, the patient acting like a case of præcox without the emotional outburst. He was dull, more or less stupid, and apathetic; orientated, and with but slight delusion.

Such a case is hard to differentiate from a *bona fide* case of dementia præcox; but it has the physiological characteristics of the cases described as dyspituitarism. The case shown here on the chart, with low blood-pressure, would seem to indicate that there is a form of dyspituitarism that has no tumor, but only inactivity, which may have been preceded by an overactivity. There are other genital changes, with adiposity, etc., seen in these cases; and the fact that all of them improve under the administration of the whole gland pituitary extract would lead one to believe this conception to be correct. These cases resemble very much the description of status thymo-lymphaticus, and as Cushing found status thymo-lymphaticus in several hypopituitary cases, it is quite possible that there is here a correlation.

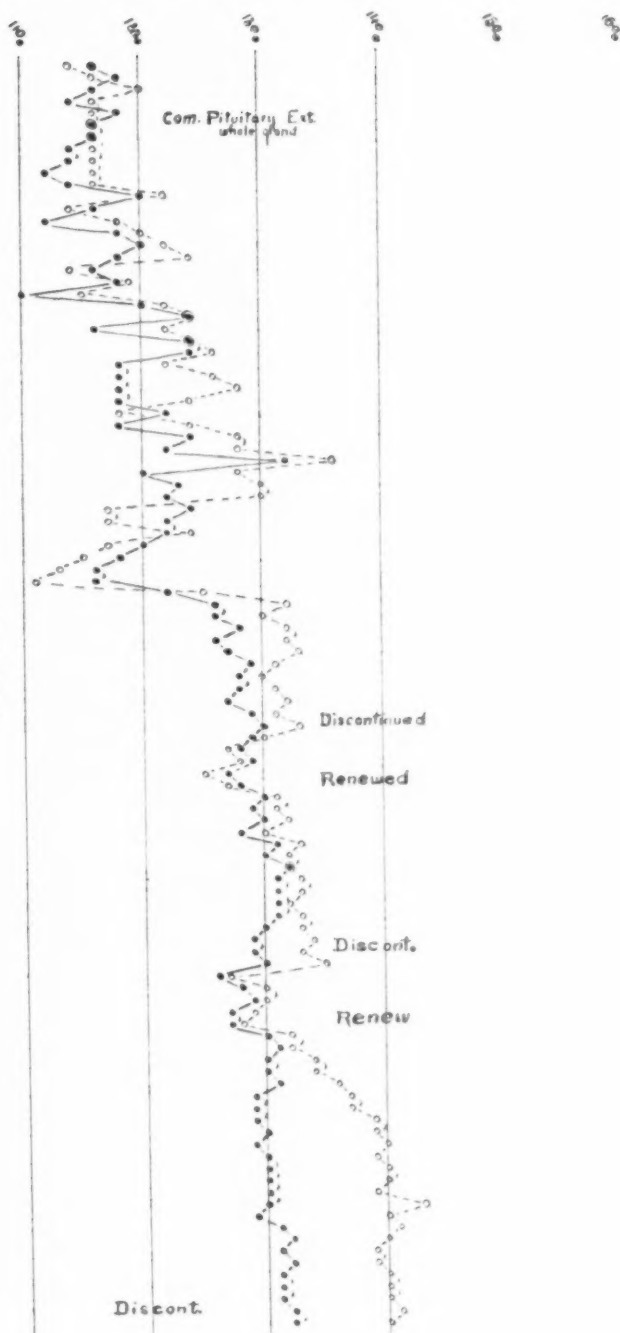
In addition to these forms, there is a hyperpituitary mental condition that has its prototype in a mentally retarded girl of five years, who has the stature of eight years. Her serum reacts only to the pituitary gland, and she represents the beginning of gigantism. This prototype is followed by cases in adults but with negative Abderhalden reactions, who exhibit unusually large skeletal growth, and sometimes reversal of sexual development, with the mental symptoms of hypomania. The blood-pressure is usually very high, as shown in Chart III.

Working on the assumption that this is hyperpituitary, and studying Paton's chart, we found that the thing that would inhibit



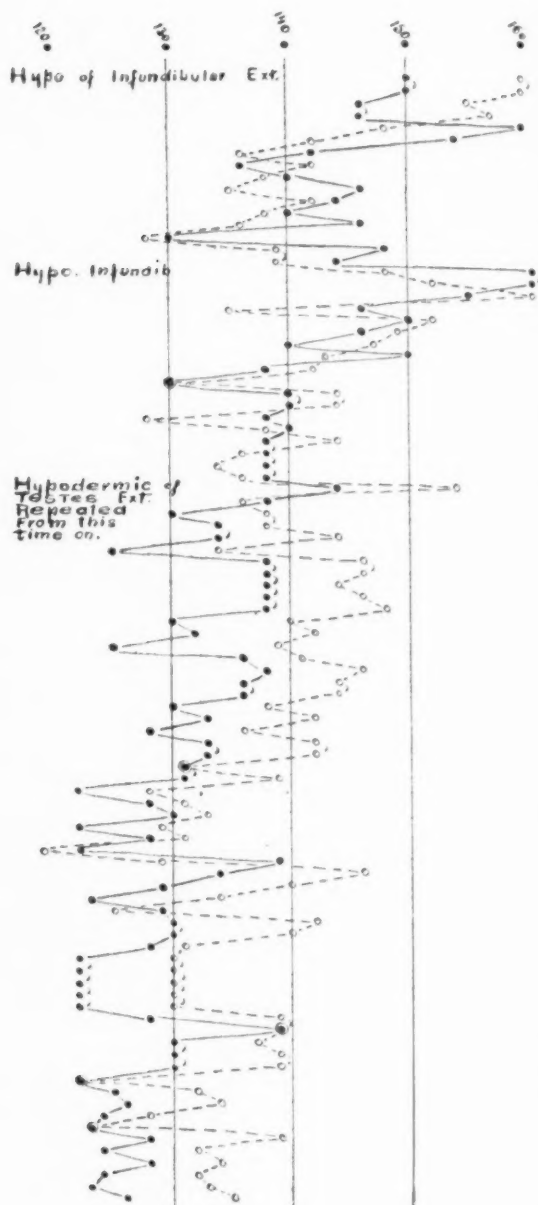
Daily blood-pressure readings in case giving no Abderhalden reaction, but having the physiological symptoms of dyspituitarism. Improvement was coincidental with the general rise in blood-pressure. And the cases of this type appeared to have recovered when the pressure, with patient standing, rose 10 points over that taken when patient was recumbent.

CHART II.



Case of apparent hyperpituitarism. Daily readings, lying and standing. Exacerbations and improvement as result of different injections coincidental with changes in the reading.

CHART III.



pituitary activity would be extract of testicle. This we administered in four cases of this type; and the mental symptoms subsided, after each injection, within 24 hours. They rose again; but repeated injections of Brown-Sequard fluid was followed by recovery in a very short time. This does not mean that all cases of mania will recover under treatment with Brown-Sequard fluid, but only those of the type of hyperpituitarism.

A résumé of this paper, which is here offered only as a preliminary report on this method of study, would be that:

(1) In a group of cases of dementia præcox, Abderhalden reactions were obtained in some instances to testicle and pancreas; and in others, to testicle and thyroid; while in still others, no reaction could be secured.

(2) In the individuals that gave the reactions to testicle and pancreas, there were observed physiological symptoms of the same type as those found in animals from which the thymus had been removed.

(3) In examining the blood of animals whose thymus had been removed, the same reactions were obtained as in the cases of a certain group of patients, indicating that in this group there exists a disease entity.

(4) With regard to the pituitary, there were a considerable number of cases with the symptoms of dyspituitarism that improved with pituitary extract. There were also a group of cases of hyperpituitarism that improved with the opposite organic extract, which is the Brown-Sequard fluid.

The reliability and specificity of the Abderhalden reaction for presence of specific protective ferments has been so seriously questioned during the last year that a full description of the technique employed is necessary.

#### TECHNIQUE.

(1) Collection of serum-blood was taken from the medium basilic vein with a sterile Luer syringe, placed in a sterile tube plugged, and the serum allowed to separate. The serum is then removed and centrifuged, until entirely free from cells, care being taken not to contaminate the serum with bacteria, or cause a trace of hæmolysis. Hæmoglobin-free and cell-free serum was then dialyzed against sterile 0.9 per cent salt solution until the rest of the test was ready to set up—usually about six hours.

(2) *Substrates*.—These were made from pituitary gland, thymus, thyroid, para-thyroid, pancreas, spleen, liver, adrenal, kidney, testes, and ovary. Each gland was cut into very small pieces, washed repeatedly in sterile-distilled water, to which one drop of acetic acid had been added. The ground-up tissue was stirred thoroughly in the water and then allowed to settle, when the supernatant water was decanted. This process was repeated with fresh acidulated water until no trace of blood remained. The tissue was then transferred to boiling water, in which it boiled for one-half hour. The water was changed and the process repeated until the water squeezed from the substrate would not give a trace of blue with Ninhydrin test.

(3) *Dialyzing Thimble*.—Schleicher and Schull No. 579a were used, after first testing their permeability to amino acids and peptones and their impermeability to serum. This was done exactly as described by Abderhalden.

(4) *Test Proper*.—The technique of the test proper was in every respect as described by Abderhalden, except that in addition to the serum and substrate controls two extra controls were added, (1) normal serum and substrate and (2) substrate and serum in separate thimbles, but suspended in the same cylinder of sterile-distilled water. Enough blood was taken from each patient to test the serum against every gland, or the great majority of glands, using in every case 1.5 cc. of serum in each thimble. The reaction was read after 16 hours incubation at 37° C. Every effort was made to exclude bacterial contamination; cultures were made from every tube, and in no case was contamination ever discovered. At the end of 48 hours the cylinders were read again and the tests discarded if at that time any of the control tubes showed a trace of blue with ninhydrin.

The Abderhalden reaction was first found in the blood of animals after the parenteral introduction of alien proteins and later demonstrated in the blood of pregnant women, cancer and sarcoma patients, the digestion in these cases was directed against placenta, cancer tissue and sarcoma tissue, respectively. Fauser in the spring of 1913 demonstrated a specific reaction against sex glands, testicle in the male and ovary in the female, which he said was present in all cases of dementia præcox, and occurred in no other mental condition. His work was enthusiastically corroborated by many observers, notably Kafka, Wegener and Fisher. Their col-

lective examinations made a very large series of cases and showed a remarkable uniformity of results. On the other hand, a group of men reported a most heterogeneous hodge-podge of findings, with practically no uniformity. These men conclude that there is no specificity in the reaction and that it cannot be accepted as an accurate clinical method, at least until much more thoroughly investigated. A third group find that while the majority of dementia præcox cases give the reaction to sex gland, still it also occurs in other mental states, especially in the alcoholic psychoses, Basedow's disease, and others, but feel that these divergent findings in no way detract from the ultimate importance of the reaction in cases of dementia præcox.

From a comparatively large number of examinations in cases of pregnancy, cancer, sarcoma, mental disease and experimental animals (examinations carefully repeated and doubly controlled), we feel that the Abderhalden reaction is specific; that is, that it represents a definite specific phenomenon.

Whatever the ultimate explanation of the phenomenon may be, whether, as Abderhalden suggests, it is due to the presence of a specific protective ferment, or, as Brofenbrenner and Schwartz suggest, that it is an auto-digestion of the serum by the specific removal of a normal inhibiting substance, probably the antitrypsin allowing the normal proteose to act—it is the expression of a specific phenomenon.

Granting, for the moment, the specificity, how then can you explain these tissue substrate results? What is the significance of the sex gland reaction in dementia præcox? Innumerable explanations suggest themselves, but it seems to us that, taken in relation with the work of the experimental physiologists, the only explanation that can be worked out must lie in the parallel examinations of the serum of animals from which some of these glands have been removed. These experimenters have shown that the most intricate and complex inter-relationships exist between these so-called ductless glands, and that these at present are only imperfectly understood. In these comparative studies, that is, the study of the animal during life and after death, with frequent control of the serum by the Abderhalden method, as in the case of these thy-mectomized dogs which we report, this type of study by means of the Abderhalden reaction may prove to be the beginning, or a basis, for organ diagnosis.



TABLE I.

SYMPTOMS PHYSIOLOGICAL.  
DEMENTIA PRÆCOX.

Symptom.	Reference.	Symptom.	Reference.
Nutritional variations.....	Tanzi.	Skin dry, pasty, greasy.....	Paton.
Processes of elimination sluggish.	Bianchi.	Pimples (acne vulgaris).....	Paton.
Exaggerated knee jerks.....	Tanzi.	Vaso Motor disturbances.....	Paton.
Tendon reflexes increased.....	Boril.	Dermatographia.....	Paton.
Diminished cutaneous reflexes..	Boril.	Cyanosis.....	Paton.
Tremor of eyelids-closed.....	Tanzi.	Weakness and temporary spastic condition of legs.	Paton.
Tremor of tongue and extremities.	S. Paton.	Weakness—adynamia.....	Paton.
Occipital headache.....	Tanzi.	Increased mechanical irritability of muscles.	Paton.
Constipation.....	Tanzi.	Contraction of eye muscles—nystagmus.	Paton.
Insomnia.....	Tanzi.	Pupils react immoderately to light.	Paton.
Low blood pressure.....	Bianchi.	Hippus sometimes present.....	Paton.
Temperature febrile first attack..	Bianchi.	Profuse salivation and sweating..	Paton.
Temperature low-depressed periods.	Paton.	Westphal-Pilcz sign often present 78%.	Boril.
Pulse feeble, rapid.....	Bianchi.	Oculo-pupillary reflex inconstant.	Boril.
Tongue coated.....	Bianchi.	Leris, negative or asymmetrical irregularities of menstruation.	Tanzi.
Breath often acetonie.....	Bianchi.	Impotence.....	Tanzi.
Loss of appetite.....	Bianchi.	High sugar tolerance.....	(?)
Increased weight (hebephrenics).	Paton.		
Rapid loss of weight.....	Paton.		
Skin smooth, moist, pigmented...	Bianchi.		

TABLE II.

## DEMENTIA PRÆCOX.

## THYMUS GROUP.

## Symptoms we found in the cases.

Leukopenia.  
Leukocytosis in improvement.  
Increased blood pressure.  
Pulse feeble and rapid.  
Temperature slightly above normal.  
Exaggerated knee jerks.  
Diminished cutaneous reflexes.  
Increased electric reaction of muscle.  
Tremor of tongue and extremities.  
Increased weight, later loss of weight.  
Increased perverted appetite.  
Westphal-Pilcz sign.  
Nutritional variations.  
Spasm muscles.  
Increased mechanical irritability of muscles.

## THYMECTOMY.

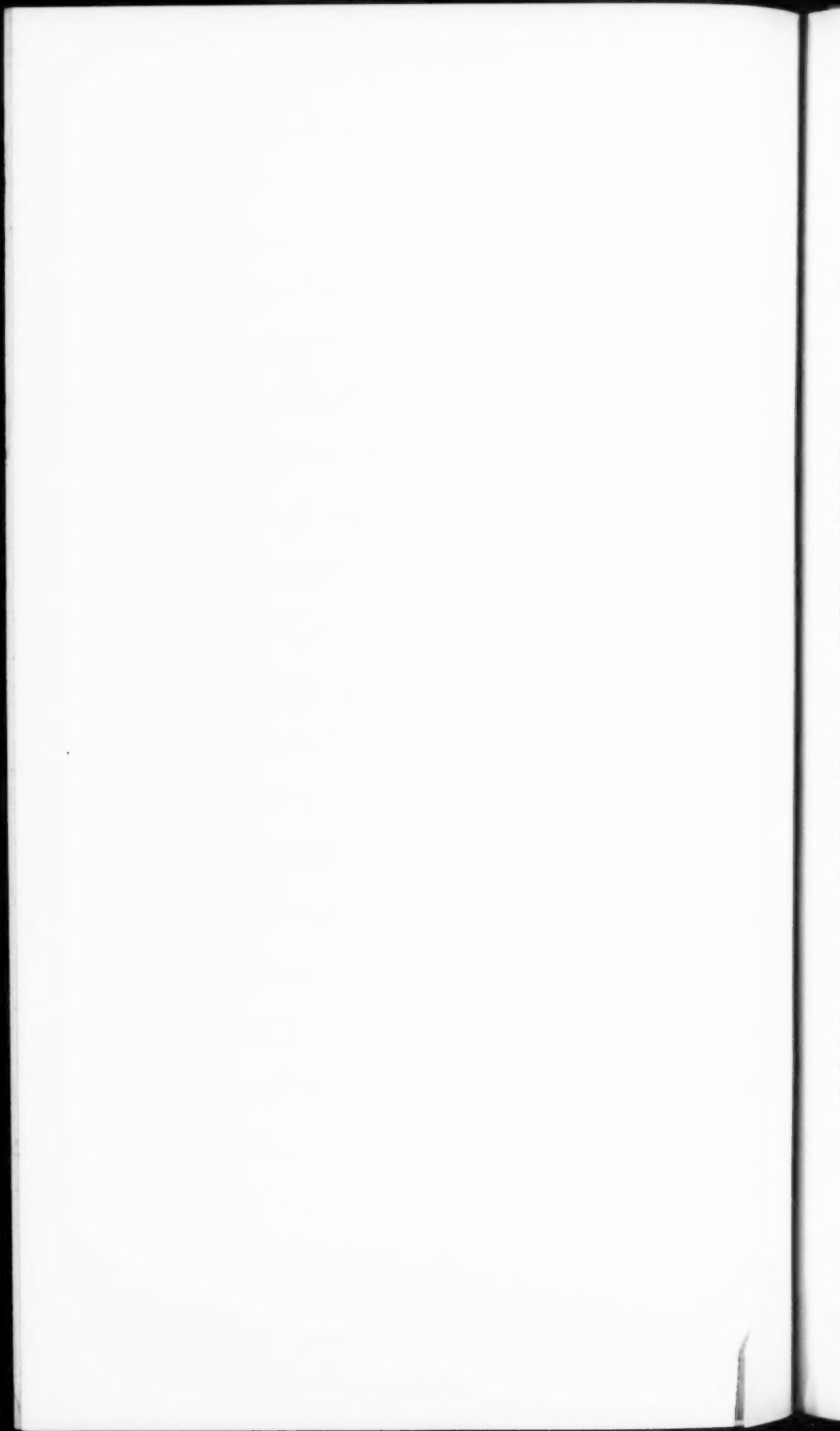
## IN ANIMALS.

## Symptoms described in literature.

Decrease in leukocytes..... Klose.  
Increased blood pressure..... Klose.  
Rapid pulse..... Klose.  
No temperature change..... Klose & Vogt.  
Increased tendon reflexes..... Klose & Vogt.  
Skin reflexes first increased and then decreased. Klose & Vogt.  
Increased electrical excitability..... Basch, Klose & Vogt.  
Muscular tremors..... Klose, Vogt & Matti.  
Increased weight..... Klose, Vogt & Matti.  
Emaciation, later stages..... Basch, Klose, Vogt & Freidleben.  
Increased and perverted appetite.... Klose, Vogt, Rextelli & Freidleben.  
Dilated pupils.  
Hair rough, falls out..... Klose & Vogt.  
Tonic and conic muscle cramps.... Basch.  
Increased mechanical irritability of muscles. Paton.

TABLE III.  
INTER-RELATIONS.

Name.	Reference.	ANIMALS. Subject.	Findings.
<i>Thymus and Gonads.</i>			
Klose, H.....	Jahrbuch für Kinderheilkunde, Dec. lxxviii, No. 6653.	Dogs (thymectomized).	There is antagonism between sex glands & thymus.
Klose & Vogt. (N. Paton).....	"Regulators of Metabolism."	Dogs .....	Thymectomy results in simple hyperplasia of ovaries & testes.
Henderson ...	Jour. of Phys., 1904, vol. 31, p. 221.	Castrated cattle.	In castrated cattle thymus nearly double normal size.
Paton .....	.....	Guinea pigs...	Confirmed Henderson's findings. Thymectomy before puberty results in abnormally rapid growth of testes.
Paton, Soli, (Halsted) .....	Article on Thymus, J. H. U. Bulletin, Aug., 1914.	.....	Thymectomy increases weight of ovaries. During climacteric there may develop severe Graves disease.
Tandler, Gross.	(Halsted) .....	.....	Thymus shows abnormal persistence in eunuchs.
<i>Thymus and Pancreas, Spleen.</i>			
Matti, H.....(Halsted) .....	.....	Dogs .....	Thymus hyperplasia followed extirpation of spleen.
Klose & Vogt. (Paton) .....	.....	Dogs .....	Thymectomy results in hypertrophy of pancreas and follicles of spleen.
Matti, H.....	.....	Dogs .....	Thymectomy results in hyperplasia of pancreas.
<i>Thymus, Spinal Cord and Brain.</i>			
Klose & Vogt. (Paton) .....	.....	Dogs .....	After thymectomy changes are described by Klose & Vogt, observed in spinal cord and brain.
Basch, Klose & Vogt.	(Paton) .....	Dogs .....	Thymectomy produces nerve symptoms not unlike those of parathyroidectomy.
<i>Thymus and Pituitary.</i>			
Cushing .....	Book on Pituitary Body.	Patients and dogs.	Found large thymus in hypopituitary states and increased thymus in hypophysectomy.
<i>Thymus and Adrenals.</i>			
Klose .....	Jahrbuch für Kinderheilkunde, Dec. lxxviii, No. 6653.	Dogs .....	Thymectomy increases hypertrophy of chromaffine cells of adrenal and excess of adrenalin in blood.
Soli, Matti, H. (cited by Halstead) ..	.....	.....	Thymectomy increases size of adrenals.
Matti, H.....	Ergebnisse der inneren, Med. u. Kinderheil, Bd. 10 (quoted by Paton).	Dogs .....	Thymectomy results in hypertrophy of supra renal cortex.
.....	Halsted cited .....	Dogs .....	Thymectomy results in hypertrophy of medullary portion of adrenals—Thymus hyperplasia following extirpation of spleen showed great diminution of adrenal medulla.
Wastenson ... (Halsted) .....	.....	.....	Involution of thymus results from injection of extract of medulla and cortex of adrenals.
Boignet, Matzonkia.	(Halsted) .....	.....	Excision of adrenals results in hypertrophy of thymus.
<i>Thymus and Thyroid.</i>			
Tatum .....	(Halsted) .....	Rabbits .....	Thymus atrophies after thyroidectomy.
McClure, Howland, Matti, Klose.	(cited by Paton—ref. given above).	Dogs .....	Thymectomy results in over activity of thyroid.
Matti, H.....	.....	Dogs .....	Thymectomy results in slightly increased thyroid.



## THE SO-CALLED MIXED STATES AND ATYPICAL FORMS OF MANIC-DEPRESSIVE INSANITY.<sup>1</sup>

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Of the broad generalizations which we owe to the genius of Kraepelin none is better founded or more generally accepted than that of the manic-depressive group. Although some authors still use the term to include only cases which show more than one attack of excitement or depression, or an alternation of the two, while retaining the older names of acute mania and melancholia for single isolated attacks, the sense in which it is used by its originator is so well recognized that there is no need to enter upon a discussion of the relation of the manic-depressive psychoses to other systems of nomenclature.

It is, however, of great importance to consider the essential feature which underlies the manifold clinical pictures included under this title. If one reads the description given by Kraepelin one cannot but be impressed by the definition of the group by the presence of certain so-called fundamental traits (*Grundzüge*). The manic states are characterized by exaltation of mood, flight of ideas and press of activity, whereas the depressed forms are said to be compounded of depression of mood, difficulty in thought and difficulty in action. It will be seen at once that these two triads of what are often called symptoms relate to disorder in the three time-honored subdivisions of mental activity, affect, intellect and will. Although such artificial abstractions are perhaps justifiable for purposes of description, it must never be forgotten that they are not separate entities. Definitions of mental states such as those quoted above resemble very closely descriptions of movements in terms of the contractions and relaxations of the various muscles concerned in carrying them out. To do this is to run the serious danger of forgetting that, physiologically, the movement as

<sup>1</sup> Read in substance before the Meeting of Alienists and Neurologists with the Chicago Medical Society at Chicago, July, 1913.

a whole is a unit and that it cannot be subdivided without losing its biologic meaning entirely.

The brain deals only with movements and not with muscles. Excessive function of that part of the cerebral cortex directly related to the neuro-muscular system, such as occurs for instance in a convulsion, results in the performance of *movements* and not simply in the contraction and relaxation of muscles. This same principle must also hold true for the higher nervous mechanisms. The affect, intellect and will at any one moment represent a functional *unit* or purposeful combination of activities which has been developed during the life history of the race or of the individual to meet certain changes in the body or its environment. In other words any particular state of consciousness (including both thoughts and feelings) together with the appropriate activity or inactivity of the effector mechanisms of the body is a physiological unit which may be called an attitude or adjustment of the organism as a whole and which has been evolved as a more or less adequate mode of meeting certain conditions of life.

Viewed in the light of biology, then, the mental states included under the title of manic-depressive insanity represent certain attitudes or adjustments which are more or less well adapted to meet certain situations of every-day life but which are pathologic in degree and in relation to the actual situation in which the individual is placed. As Adolf Meyer has expressed it, these states are more or less purely "affective oscillations." The feeling of happiness, the talkativeness, activity, tendency to "butt in," flightiness, etc., are not separate and independent "symptoms" but *are* the attitude of the organism towards its environment. They resemble in all particulars, except perhaps in degree, adjustments made under appropriate conditions by healthy people.

Kraepelin's description of the clinical facts leaves nothing to be desired and one cannot but admire his faithful portrayal of them even in the face of the difficulties which result from the point of view. If one had to deal only with the types which he describes as pure mania and pure depression respectively, there would be no need to quarrel with the mode of description. But in applying this method of analysis to the so-called mixed states numerous difficulties are encountered.



Furthermore when the presence or absence of these basic elements is relied upon for the differentiation of manic-depressive psychoses from other types of mental disorder, such as those included under the head of dementia præcox, the utmost confusion is bound to result.

Not until the pictures presented by cases of mental disorder are grasped as modes of adjustment, and the manic-depressive disorders in particular as more or less adequate modes of adjustment, can one hope to gain any insight into the essentials of psychiatry. The manic-depressive oscillations are strictly attitudes and not merely combinations of certain cardinal traits. These last are purely artificial abstractions incapable of independent existence (and hence of independent variation) and are permissible only for convenience of description. The main characteristic of the manic-depressive disorders is that the attitudes are purposeful and appropriate even if the circumstances are not such as seem to justify their existence. They are pathologic in degree but not in kind. The situation might be compared with that which obtains in chorea wherein the muscular activities are all purposeful *movements* which in health subserve a definite function but which in this disease are provoked in an unusual manner and are therefore not adapted to the actual situation.

The importance of these considerations becomes manifest when one turns to the pictures described as "mixed states" (*Mischzustände*). According to Kraepelin, to whom we owe the recognition of their clinical relation to the pure forms of manic excitement and depression, these condition-pictures result from varying combinations of the fundamental traits already outlined. Upon this theory it is mathematically possible to postulate the existence of eight different combinations of these two triads of basic characteristics, two of which correspond with pure excitement and depression respectively. There then remain six other possible types, the so-called mixed states.

Kraepelin illustrates this view schematically by his well-known curves which have been reproduced in different form by Ballet<sup>1</sup> and Deny.<sup>2</sup> Clinical study has revealed pictures which are more

<sup>1</sup> L'Encéphale, Vol. IV, 2e. sem., 1909, p. 362.

<sup>2</sup> Ibid, p. 364.

or less capable of analysis in this way. They are given by Kraepelin as follows:

- (1) Pure manic excitement (*schulgerechte Manie*).
- (2) \* Depressive or anxious mania ("depressive" oder "angstliche" Manie) which is said to be compounded of a depressed or fearful mood with flight of ideas and press of activity.
- (3) Excited depression (*erregte Depression*). These cases are said to have a depressed mood with difficulty in thought but a press of activity.
- (4) Unproductive mania with poverty of ideas (*unproduktive gedankenarme Manie*). The analysis of this type presents exaltation of mood, difficulty in thought and a press of activity.
- (5) Pure depression (*schulgerechte Depression*).
- (6) Manic stupor. Exalted mood with difficulty in thought and action.
- (7) Depression with flight of ideas (*ideenflüchtige Depression*). Depressed mood with flight of ideas and difficulty in action.
- (8) Retarded mania (*gehemmte Manie*). This is described as showing exalted mood, flight of ideas but difficulty in action.

Despite the formal, diagrammatic method of analysis, the descriptions of the clinical features observed in the different types are strictly true to life and represent pictures which are more or less commonly met. The great objection to the method lies in the fact that, were we to accept it literally, we would have to assume that there are only two kinds of mood, two kinds of disturbance in thought and two kinds of disordered activity. Such is obviously not the case and Kraepelin is careful to point out that the two sets of cardinal traits are not the exact opposites of one another.

Even if they were exact opposites there would still be no justification for the use of the title "mixed." The elbow joint is capable of movement in two directions, flexion and extension. In the former the biceps muscle contracts while the triceps elongates; in the latter, the activities of these two muscles are reversed. There are also possible two other combinations of the activities of these muscles: both may contract or both may elongate. The former occurs frequently under conditions requiring fixation of

\*It is interesting to note that in the seventh edition of his text-book Kraepelin here described a somewhat different picture with the same analysis under the name of angry mania (*zornige Manie*).

the elbow joint. It would be just as permissible to speak of this fixation of the joint as a "mixed condition" of flexion and extension as it is to speak of mixed states of manic-depressive insanity.

It may be objected that the "mixture" in the latter instance applies to the cardinal traits and not to the exaltation and depression as biologic attitudes. Such an analysis might be permitted, even if it has no practical value, in speaking of the functions of muscles which have a more or less individual and separate existence but it can hardly be justified for such purely artificial abstractions as affect, intellect and will.

As Kraepelin himself points out prototypes of the clinical pictures presented in the so-called mixed states are met with in normal life. He says<sup>5</sup>: "We meet with silent, contented moods as well as happy, noisy excitement and with violent outbursts of despair as well as a dull, rigid, painful depression." The accepted lover, for instance, does not always show a happy, flighty, active attitude but may be happily absorbed, speaking and doing but little, building castles in the air, etc., which would correspond very closely with the picture described under the title of manic stupor (type 6).

The difference between the modes of adjustment to such a situation shown by two persons must depend upon differences in the character of the individuals concerned. In fact, all that is meant by the character of an individual is simply the manner in which he tends to adjust to situations in which he may find himself. The attitudes cited above may both be considered adequate, but the one man, when everything is favorable to the accomplishment of his biologic needs, becomes more active and energetic, his interests in the outside world become broader even if more superficial and he is, as we say, pleased with everything. The second individual under similar conditions becomes so absorbed in ruminating over the possibilities arising from the situation that he does not attend to anything else.

Faithful to the facts of clinical observation Kraepelin recognizes that the number of mixed states actually observed far exceeds

<sup>5</sup>Lehrbuch, 8th ed., p. 1286. "Neben der lauten freudigen Erregung begegnen uns stillvergnügte Stimmungen, neben der starren, dumpfen, schmerzlichen Versunkenheit die wilden Ausbrüche der Verzweiflung."

the six predicated by his hypothesis and he candidly admits that these need further study and analysis. In the latest (8th) edition of his text-book he suggests as a possible explanation for the occurrence of so many forms that there are other spheres of mental life, besides the three considered in the production of the fundamental traits, which are capable of independent variation, such, for instance, as attention, perception, mental work, judgment and so forth. He suggests that the addition of these variants to the three pairs already described will enormously multiply the possible number of clinical forms.

These so-called mixed states are said to be most frequently observed as transient pictures during the transition from a state of manic excitement to one of depression or *vice versa*, but they also occur, not very uncommonly, as isolated and independent attacks of more prolonged duration. Under these conditions there are certain features which are especially striking and, I believe, significant. First, it may be noted that a second attack in such a patient will, as Kraepelin points out, almost photographically reproduce the first. This at once suggests that the particular form of psychosis is dependent upon some peculiarity in the personality of the patient. Secondly, it also frequently happens, where such a patient presents an alternation between what may be described as excitement and depression, that if one of these states is of such character that it would be grouped with the mixed conditions, the other also shows features which distinguish it from the so-called pure type.

As an illustration the following case may be quoted:

J. B., female. The family history shows some tare but need not detain us. The patient was apparently a healthy child but as she was born in England no details are obtainable. She developed a goiter at the age of 18. She was married at 17 and is said to have been happy and affectionate but to have stayed much at home, devoting herself entirely to her husband and family. She was always somewhat inclined to belittle herself and was rather over-religious.

During her second pregnancy at the age of 25 she had several "spells of melancholy" and for three or four months following the birth of the child was somewhat severely depressed. Similar attacks occurred during the next and last pregnancy at the age of 28. She has, since then, frequently shown spells of apprehensive depression at night, has been more or less blue and has worried unnecessarily about financial matters.

The depression became more marked at the age of 31 and was accompanied by apprehensive agitation. She was sent to a sanitarium where she attempted suicide. When admitted to the Kankakee State Hospital at the age of 32, she was extremely agitated, depressed and very restless, wringing her hands, moaning and screaming. The content of her utterances was monotonous. "Oh! My God!" "Oh! My God!" "Why don't you kill me?" etc. She spoke of causing her family to become penniless, her children were being tortured, etc.

This condition of anxious depression which would fit in Group 3, "erregte Depression," of Kraepelin, with depressed mood, difficulty of thought but press of activity, continued altogether for about two years, at times more severe than at others, and then slowly improved. She then on several occasions showed periods of excitement in which, without any very marked press of activity she would sing a hymn over and over, taking no notice of those around her. At times she became more restless and sang over and over "I am Christ," "I am the Saviour," "You are Mary Magdalen" (to the nurse).

She would lie on the floor singing and kicking the floor monotonously with but little evidence of distractibility. Occasionally there were suggestions of a flight in an otherwise monotonous stream, *e. g.*, "Eyes, guiding, deciding, gliding, riding to ride," her teeth being tightly clenched throughout.

After several such oscillations she finally recovered and has now been home well for two years.

This excitement might well be grouped with the "mixed state" of unproductive mania (Group 4) with exalted mood, difficulty of thought (shown by the monotonous repetition) and press of activity. The main point of interest, however, is the fact that the periods of excitement show features which are as unusual in a manic attack as is the anxious agitation in a manic-depressive depression.

Thirdly, in some of the types, especially that known under the name of manic stupor, which is one of the more common forms occurring in independent attacks, there are frequently certain features in the picture which appear odd and out of keeping with the general attitude of the patient. Many such cases have been recorded in the literature and they have sometimes been described as examples of manic-depressive insanity with hysterical manifestations. Kraepelin speaks of these cases as not seldom showing katalepsy and admits that they may bear a very strong resemblance to katatonia. He also calls attention, in the various mixed states, to the occurrence of apparent contradictions in regard to

the content of the thoughts, expressed in words, and the mood shown by other movements of expression, such, for instance, as the patient laughing while making such a statement as "His nerves are dried up and the blood no longer circulates above his neck," etc. Such manifestations as these are obviously not in keeping with the definition given above of the essential characteristic of the manic-depressive reactions, nor are they easily explained upon the basis of a mixture of certain fundamental traits such as is offered by Kraepelin's hypothesis. I propose to leave them for the moment and to discuss them in relation to a case history.

Fourthly, while the prognosis in the manic-depressive reactions, as a whole, is good in the sense that these patients do not tend to undergo mental deterioration even when the attacks are prolonged, yet the outlook in some of the so-called mixed states is not so favorable. Some of them, and it seems to me especially those cases which show to marked degree odd and unexplainable features, may undergo more or less deterioration. Of course it may be objected that in these cases there has been an error in classification and that the disorder was really one of dementia præcox rather than of manic-depressive type. This subject will be further considered after the presentation of a case.

Besides the so-called mixed states there are a number of pictures, occasionally met, which do not permit of grouping with any of the eight types mentioned above and yet in which the manic-depressive constitution seems to play an important part in the determination of the psychosis. Among these may be mentioned cases showing marked delirious features and others with very definite paranoic developments. Such cases are often grouped together as atypical forms. The following case may be quoted as an example of a paranoic type:

REPEATED ATTACKS OF DEPRESSION AND EXCITEMENT WITH SOMEWHAT POORLY SYSTEMATIZED, YET VERY STABLE, FANTASTIC TREND OF THOUGHT.

The patient is the daughter of an alcoholic father and a mother who is described as nervous, erratic and selfish. She was healthy as a child but always somewhat old for her years and associated with those older than herself. She describes herself as always somewhat masculine in her desires and she always wished to become a great writer. She married at the age of 24 a man whom she describes, with apparent justice, as rather effeminate. She states "he was the wife and I the husband of the family." She has been pregnant twice but on both occasions an abortion was procured.



Three years after marriage, at the age of 27, her husband failed in business. The patient then became depressed, expressed many hypochondriacal ideas and remained much of the time in bed. This lasted for about a year when she improved and obtained a position as court reporter which she filled for 6 years. At this time she was necessarily away from her husband for much of the time and became closely associated with a lawyer for whom she formed an attachment. She states that in many ways he supplanted her husband in her affections. When she was 31 this man died and she again became depressed. Soon afterwards she had vivid dreams of him and claimed that on one occasion she heard his voice saying he was not dead. She professed to believe this and spoke about it to another friend, a Christian Scientist, who replied, "Charlie is not dead but is still with us." Two months later she became somewhat excited and met a palmist who told her she was to go around the world and to become the leader of a great cult. Soon afterwards she began to receive messages concerning the stock markets and believed she was developing a "subjective mind." She began to study theosophy and professed to be a great writer. She began to express an aversion towards her husband and heard voices saying he was dead. She still continued with her reporting, however, for two or three years longer so that the exaltation cannot have been very great. She then again became depressed without obvious cause, complained that her eyes had given out and that she had some uterine trouble. She gave up her position and spent much of her time in bed. A few months later she suddenly became exalted, wrote many letters and started a course of English at the university. She also took charge of her husband's affairs and was decidedly hyperactive for about 4 years with an occasional brief period of depression.

When 39 years of age her husband again failed in business and the patient became once more depressed and unable to work for 4 or 5 months. She then became more excited again and began to write copiously upon theosophy and other subjects. She expressed aversion for her husband and spoke of being protected by the actor, Mansfield. This state continued for two years when she ran away to Chicago and refused to return with her husband and brother with the consequence that she was taken to the Detention Hospital. She was allowed to return home in 9 days, and again suddenly became depressed. Six months later she attempted suicide and was committed to the Watertown State Hospital. There she was depressed and agitated, morose, irritable and refused food. She slowly improved and was paroled in 4 months but almost immediately again attempted suicide and had to be returned to the hospital. The picture then was much as before with the addition of hallucinations of depressive character and some ideas of persecution. She slowly improved and was finally paroled at the end of 18 months.

According to the husband she was somewhat exalted when she returned home and for 6 or 7 months afterwards but then became entirely normal. During this interval she seemed quiet and contented, made no attempt to write and worked steadily in a bakery.

Eighteen months later she again suddenly became excited and began to write short stories and theosophical articles. The aversion for her husband returned and she wrote many letters to noted men whom she claimed to have known in a previous existence.

When admitted to the Kankakee State Hospital at the age of 46 she presented no evidence of somatic disease. Her appearance was decidedly masculine and this was enhanced by her mode of dress. Since admission she has been constantly exalted, expressing numerous grandiose ideas both by word and letter. She has been for the most part very quiet and pleasant and has shown no press of activity except in the matter of letter writing. She writes numerous lengthy epistles to men couched in intimate terms claiming acquaintance with them in previous lives and in the "astral plane." She often signs herself "Master of Love" and believes she is much sought in marriage even by the "other Master God" who has "cut with her ward physician" for this privilege. In some of the letters she quite evidently places herself in the male rôle and there are many gross erotic allusions. She is strongly averse to her husband, stating that "he is a Jupiter man" while she is a "Venus woman" and should therefore have married "a Mars man," many of whom she discovers in the physicians with whom she comes in contact.

There is no suggestion of flightiness in her stream, everything is done quietly and steadily; her writing is neat and performed without undue haste. She occasionally, for a few hours, becomes depressed and irritable, refuses food and accuses those around her of persecution by detaining her. She also takes dislikes to some persons and treats them with complete contempt and never speaks or even turns her head when addressed by them.

Many of her phantastic notions are steadily maintained and are held together in a loose way by a theosophical jargon, but it is difficult to get any consecutive and coherent account from her.

She is perfectly oriented and her memory is good in every respect.

In connection with this case it is interesting to note that when first presented at a staff meeting the case was grouped with the paranoic conditions but further observation and history emphasized very strongly the affective oscillations and led to the recognition of the pronounced manic-depressive features. In the 8th edition of Kraepelin's text-book there is described a new group of disorders under the title of paraphrenia or paranoic dementia. This group is included with dementia præcox under the broader heading of endogenous dementia. The case detailed above corresponds very closely with that type of paraphrenia which is characterized as the expansive form. Kraepelin states that, hitherto, he has included these cases in the manic-depressive

group but now separates them for the reason that the outcome is much less favorable. Although there is no deterioration like that observed in dementia præcox, yet the patients do not recover, at any rate during the time that he has had them under observation.

Nevertheless, it must be conceded that this patient has shown a periodic recurrence of attacks of depression and excitement throughout her life. Further, that these affective oscillations represent quite adequate attitudes except in regard to the trends of thought which are certainly odd, fanciful and symbolic. It should also be noted that the patient has always shown, even during the normal intervals, a peculiar mode of thought. The precocity, masculinity and theosophical interests all stamp her as an unusual type of personality and it is just these trends which are expressed in exaggerated and uncensored form during the periods of excitement. The picture of the depression is also unlike the typical sad hopelessness of manic-depressive insanity. The marked hypochondria with special emphasis upon the sex organs, the agitation and feeling of persecution, all give an unusual character to the attitude. It hence seems justifiable to consider this patient as presenting manic-depressive oscillations which bear the stamp of her peculiar personality.

According to the view here advocated, it is obvious that such types are not strictly "mixed states" at all; they are simply affective oscillations in which the attitude adopted is colored in a manner peculiar to the individual, exactly comparable to the different varieties of exaltation and depression in response to adequate cause which are observed in normal individuals. Kraepelin admits the possibility of this explanation in one brief remark by saying\*: "It may be that we have to deal here not so much with varieties of the disease-process as with personal peculiarities."

It may be objected that this discussion and criticism is merely of academic interest. Yet it has a very practical bearing upon the question of what is often called "diagnosis." The tendency to pigeon-hole our information and establish short-cuts in our work

\*Lehrbuch, 8th ed., p. 1301. "Es könnte sein, dass es sich hier nicht sowohl um Spielarten des Krankheitsvorganges, als um persönliche Eigentümlichkeiten handelt."

is one that must constantly be fought. The analyses given by Kraepelin lend themselves very readily to a definition of the fundamental traits as pathognomonic symptoms which must be sought in order to establish a diagnosis and differentiate this case, for instance, from one of dementia præcox.

Such a method still largely prevails in medicine generally and is responsible for many of the errors which are made. The case tends to be regarded from a symptomatic instead of a biologic view-point. In psychiatry it is even more deleterious for, to a very large extent, we know nothing of disease-entities and we only muddy the issue by speaking of symptoms.

Furthermore it cannot be denied that the conception which is expressed in the title "mixed" tends strongly to the maintenance of a pernicious "faculty psychology" according to which mental activities are separable into a number of independent spheres or "faculties." A careful study of Kraepelin's description cannot but impress one with the belief that this is what he really means. The diagrammatic curves, the subdivision of chapters and the suggestion, already quoted, that variations in other mental spheres than the trinity of affect, intellect and will, may be responsible for the multiplication of types, all tend to establish this conclusion.

The alternative view-point here offered, on the other hand, requires an individual study of every case. It insists upon the biologic unity of all activities of the organism as modes of adaptation to environment and offers an intelligible explanation for the endless variety of clinical pictures included under the headings of mixed states and atypical forms of manic-depressive insanity. It also permits us to understand why it is that some cases grouped with these types undergo deterioration, as it is called, or do not recover, without compelling a change of "diagnosis." At the present time it is not justifiable to argue that this patient will undergo deterioration because he has a hypothetical *disease*, dementia præcox, evidenced by the presence of certain diagnostic "symptoms." But we do know that the type of personality, or way of meeting the conditions of life, which underlies the peculiar reactions known as dementia præcox, tends to evolve by becoming more and more "shut-in" and less and less accessible to instruction and education. This would be equally true even if combined with a tendency to affective oscillation.

It is true that we are still entirely in the dark as to the actual conditions which underlie the tendency to manic-depressive reactions. Many persons considered entirely normal throughout life, are subject to similar though less severe oscillations. It may, however, be stated without fear of contradiction that this tendency is due to some inherent weakness in make-up. That some individuals who suffer from these disorders are so constructed that, even without obvious external cause, more or less prolonged affective oscillations are liable to occur. The condition in this respect is somewhat similar to epilepsy, migraine and so forth. This being granted it is obvious that the particular form which the psychosis will take must depend upon the modes of reaction which are peculiar to this individual, either as the result of inheritance or as the result of his own personal experience. Should an individual having a manic-depressive constitution also tend to react to situations in life in the modes which underlie hysteria, the paranoid personality, or even the dementia præcox make-up, his affective oscillations, whether normal or pathological, will necessarily show the characters peculiar to these habits of adjustment.

The mechanism of the odd and apparently contradictory manifestations which have been mentioned above, the peculiar trends of thought illustrated in the case quoted and the unusual type of attitude presented in the mixed states will be identical with that which accounts for the development of hysterical, paranoid, dementia præcox and other pictures without manic-depressive reaction. It would lead much too far to attempt to discuss them here.

It will be noted that no discussion has been offered of the "mixed states" said to occur as fleeting and temporary pictures in the course of a transition from pure manic excitement to pure depression or *vice versa*. It is conceded that such pictures offer considerable difficulties which are in need of closer study.

#### SUMMARY.

(1) The essence of the manic-depressive reactions is the occurrence of some appropriate affective attitude of the organism *as a whole* which is of purposeful character, abnormal because of its

severity and duration and because there is no apparent external cause for its adoption.

(2) The so-called mixed states and atypical forms are not mixtures simply of certain traits but represent affective oscillations colored by peculiarities in the make-up of the individual patient. Such modes of adjustment must be carefully studied and weighed in rendering a prognosis in any individual case.



## THE BEHAVIOR CHART IN MENTAL DISEASES.

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It is essential, if one wishes to understand the problem involved in any case of normal or abnormal behavior, to observe and record accurately the activities and ideas of the patient. This necessary work accumulates so rapidly that it often becomes difficult to retain the data and trends clearly in mind and keep them distinct from other cases. Frequently also the number of patients and other duties make it impossible to keep a satisfactory daily record of the behavior of each patient. Therefore, unfortunately, many interesting expressions, trends and attitudes are not recorded accurately in time, are even missed or their proper setting misunderstood, unless some special provision is made for observation and recording.

The purpose of the behavior chart described in this article is partly to fill this need, and to be added to the case record, but more so to extend research into the more fundamental, obscure and involved factors in behavior; to analyze and isolate such tendencies in behavior to which the human organism seems to give expression under similar circumstances, and which constitute the outlet for the emotional state. Perhaps such observations may add additional material, to find and understand and apply those fundamental biological principles, which psychiatry is so eagerly in search of at present.

With these several objects in view, it was found desirable to construct a chart upon which could be recorded the important variations in the patient's behavior, and which would give a graphic picture of the progress of the case. It seemed quite a simple problem at first, to construct a chart that would fulfill all the requirements, but several attempts soon revealed the difficulties involved. It was essential to have a style of chart that could be used for almost any type of a case, but it must not be too lengthy and complex. Also it should be comprehensive, and yet require

observations that a trained nurse could make with a dependable degree of accuracy without permitting the observer to rely upon his own subjective imitations. Just as case histories and records vary with the observer, so will chart records tend to vary. Behavior is manifested in waves which tend more or less to vary in intensity or degree of deviation, and to vary in duration, type and continuity. A norm or mean is necessary for comparison, and it is placed to best advantage on the chart so that it will permit the recording of such acts which are characteristic for normals or desirable to be developed in abnormals, and are of the type that are usually intermediate between the excessively expanding and excessively contracting personality.

At the Kankakee, Illinois, State Hospital, a monthly chart with daily entries was devised and used principally for the purpose of recording the attendant's observation of the patient with regard to matters of care and occupation, and other matters of statistical interest. Later in 1901, at Worcester, Massachusetts, State Hospital, a similar chart was used, which was later revised and used in the New York State hospitals with this frame, and upon the further suggestions and encouragement of Prof. Adolf Meyer, the following behavior chart was completed and is now in use at the Phipps Clinic. While its form is not original, many of the essential features pertaining to the underlying biological principles of a behavior chart are extensively used here for perhaps the first time.

The satisfaction derived from the use of this type of chart depends upon the value of a graphic plot of the progress and behavior of the patient which may be added to a case history. The behavioristic value of the chart for the study of the psychosis depends very much upon one's interpretation of behavior, its physiology and psychology.

The biological principle involved in the chart is that a personality tends to expand and contract, to maintain a mean of expression, to extend its interests, psychic pseudopodia, into certain fields and to withdraw them from others, to enjoy outlets for expression and suffer inhibitions; and that for a like physiological-psychological state, this energy tends to express itself in a characteristic-like manner. For example, no matter how intelligent men may be, if enraged, they all tend to express themselves with characteristic behavior for that state. A word of explanation may be added

here of what is meant by expanding-contracting (manic-depressive) behavior. An individual, for some to be explained reason, may be the host of a psychogenetic mechanism whereby he literally expands with energy. He is extremely active, the psychomotor apparatus is constantly at work, his fancies expand beyond all bounds, he is a king of immeasurable power and wealth, housed in a palace, where all his servants are princes and lords, etc. His mind is marvelously active and he lives a "million years in a minute." His physical powers are unlimited, etc. A week later everything may be changed to the opposite. He is in so intensively a contracted state, that he can only rub his hands and gaze anxiously, sadly, into space. He is "so weak" he "cannot move," he is a depraved, "worthless dog," a "sinner," "no good," "in the way," destitute and has "lost his soul" (libido). It would be impossible to plot a chart according to his exhilarated fancies or his hopeless pleas. But a chart may be plotted from the psychomotor expressions of such states, and a helpful inference drawn about the status of the individual's psychodynamic functions.

The author of the chart does not merely maintain that an individual has instincts to pick and rub himself, to be mute or to decorate himself with faeces, but rather holds that if an individual reaches a certain physiological-psychological state he will pick and rub himself, etc., the act being the expression and outlet of the underlying status. That is, to repeat, emotional states have characteristic outlets.

Such spontaneous expressions as are most usual or desirable for normal individuals were selected, arbitrarily arranged and placed in the central field of the chart to constitute the norm. From observations, of the behavior of numerous cases, a group of representatives acts, which indicate less than usual or no inhibition, were arranged in a series, and superimposed in such a manner that if they are checked off, as having been performed by the patient sometime during the day, the record will soon plot a curve the least inhibited acts being highest in the curve and farthest from the normal. To plot an opposite curve of excessive inhibition and contracture of the personality, data from the observation of cases were utilized and those states of excessive inhibition and incoordination, as panic and incontinence, were placed in the series at the lowest extreme of the curve.

A distinction is made between a field of spontaneous behavior and another of required behavior. The latter is selected principally to check off the patient's daily compliance with the special needs of the hospital. It is not arranged to plot a curve except for the appetite, where advantage is taken of the resistance of the patient and his indifference to food. The sleep curve is plotted 1 sq.=1 hr. and is indicated by the irregular line running across the lower part of the chart.

The division named "spontaneous behavior" is the more important. The points required to be charted may not be the most satisfactory to be selected after further study and neither are they probably best arranged in the series, although the present selection and arrangement enables one to plot behavior quite graphically and faithfully.

Manic-depressive cases show an expanding-contracting type of behavior, which is manifested usually through generally characteristic-instinctive acts. Schizophrenic types are not quite so simple to chart, neither are the allied deteriorating types, paranoias, hysterias, and psychoneuroses. But if one includes a case record, any deviations of unusual behavior, whether manifested by a senile dementia or general paresis may be as profitably recorded as the picturesque variations of manic-depressive behavior.

The most important point to be observed in recording spontaneous behavior is the fact that it should be *spontaneous*. The estimation of a tendency or eccentricity of an individual cannot be well made unless the entire personality—the setting—is included. Such terms as "talks" are all used in a qualitative sense only. There is no reservation made for a quantitative estimation of very talkative or slightly talkative, very restless, very irritable, or very impulsive or slightly resistant, for two reasons; because for one interpreter "very" may mean "moderate," and the second interpreter insist that the patient is only "slightly" and not "very" talkative. One sees such variations expressed by teachers about the intensity of a knee jerk. Secondly, if the patient, the psychodynamic machine, spontaneously speaks only once during the day, this important phenomenon must be noted as "talks," differing from the individual who is absolutely mute. The quantitative estimation can only be made from its setting, which is revealed by all the other possibilities which must be checked off

if they occur. The psychomotor discharge through speech will not be the only expression of the psychodynamic status. The behavior of the entire psychomotor apparatus must be taken into account, and as such, a quite satisfactory plot of the patient's day may be recorded and estimated when one allows the various points to qualify one another.

Most of the words used in the chart are simple and self-explanatory. The terms within the norm need no explanation. The expansive group "restless," "irritable," "impulsive," "resistant," "angry," "combative," are so placed because they occur more frequently with hypomanic and resentful patients. "Capricious" is used as quite a general term, and includes all such behavior as the dementia præcox case who says with a smile that he shouted to hear how it would sound, or the playful tricky pranks of a manic state. "Hoarding" is here used for that behavior which is usually a preparatory stage for the "creation" of odd, fanciful, original trifles, writings, designs, etc., and is used synonymously with accumulating. There is quite a jump to "flight of ideas" but compactness necessitates this. "Distractibility" would do well just preceding "flight of ideas" and "incoherent speech" could replace the latter, but the present arrangement seems practical. "Vulgarity" is usually the forerunner of poorly controlled eroticism of which "destructiveness," "masturbation," "exposure," being "careless with the discharge of excreta," and the extreme of "decorating with excreta" form a group. "Destructiveness" does not always accompany restrained eroticism. But when it does not, it is well qualified by other controlled expressions which would not be possible for a state of total lack of inhibition.

The depressed contracted states were more difficult to plot in a curve. "Disinterestedness" and the more shut-in state of "brooding" are quite self-explanatory and are checked off when the patient shows the difficulty of overcoming his spontaneous mental attitude of disinterestedness and brooding. The patient is not recorded as being "sad" unless he says he feels sad. He is recorded as "anxious" when he is uneasy and worried about some feature of his physical condition. This seems to occur more frequently in mild depressions and psychoneuroses and is usually not so grave as the next point, "apprehensiveness," which is used for a similar state of uneasiness and worry, but is referred

to some cause in the environment, as being killed, cut up, enemies, danger, desertion, death of someone, etc. "Weeping" usually accompanies a state of more free, emotional expression than when the patient cannot "weep," but "picks and rubs" his skin, wrings his hands and paces the floor. Patients in this state often say weeping would give them relief if they could only do so. "Refuses to speak," "eyes closed," "motionless," "dressed by attendant," are grouped for the more profound states of inhibition found in depressions and catatonic states.

"Afraid" (or a general state of vague fear) seems to overlap "apprehensiveness," but is here used to include those states bordering on panickyness, for which there is no definite idea. "Afraid," "fears food" and "panicky" are so grouped to record degrees of feeling fear, which are always serious when they occur. "Fears food" always is associated with fears of being poisoned. "Incontinence" often accompanies profound depression and the paralysis of fear. It has no relation to the indifferent voiding of excreta by the manic or senile.

"Suicidal," "delusions" and "hallucinations" are placed at the foot of the division for spontaneous behavior, since they could not well be set in a curve and might occur in any picture.

The chart may be used for 24-hour periods or less. It may frequently be useful to add a term for unusual peculiarities shown in some special case, such as dreams, convulsions, tics, hysterical vomiting, etc. If so, the point to be recorded is usually replaced for "delusions" or "suicidal."

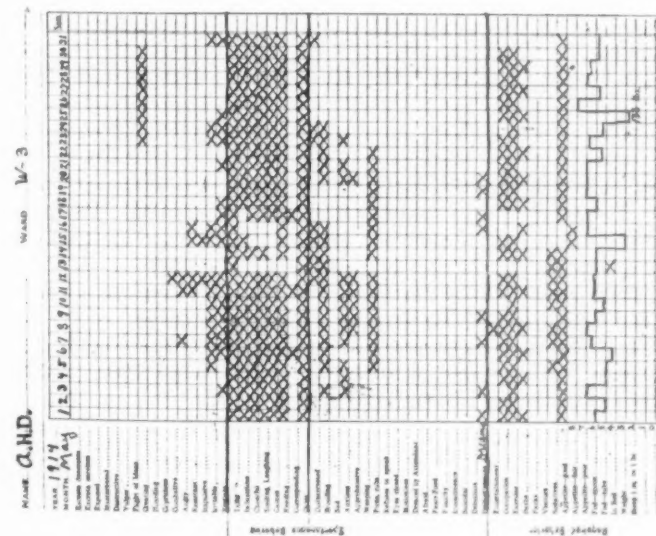
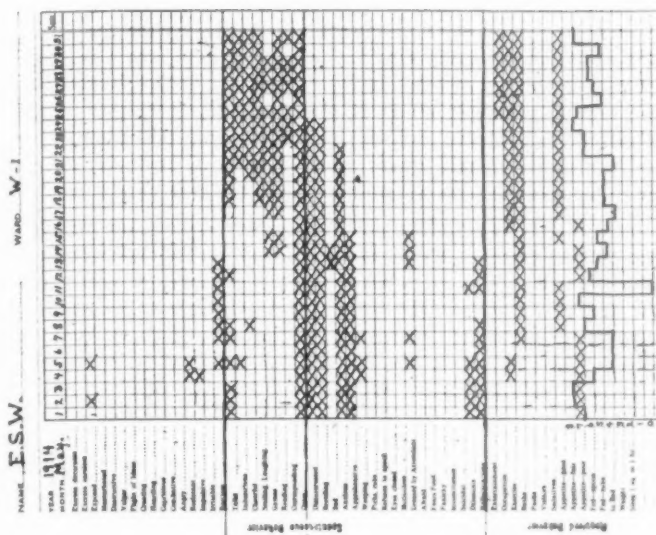
For example, in the case of Mr. D. (*dementia præcox*), on the first and second of May his behavior was apparently normal. On the third he was somewhat restless, brooding, and anxious, which almost subsided on the fourth. But on the fifth the tension increased, showing his irritability, brooding, and the return of an old tendency to pick and rub (forehead). On the sixth it became more marked, and on the seventh he had an outburst of anger. The tension, however, continued despite the efforts to control himself, as shown by the points within the norm. On the 11th he had a more violent outburst of anger, and this was followed on the 12th by another outburst and a violent assault upon an attendant. The patient really was reacting with resentment toward his physician, but for some reason substituted for his attack the unsuspecting attendant. Here we see a gradual accumulation of resentment and a final outburst. The next day (13th), he regretted his actions, and the chart shows the marked inhibitions of self-censorship. He remained in his room, quiet, brooding, disinterested



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but somewhat talkative. On the 14th this trend was resumed, and by the 15th he was again in his state of anger and protest. By the 23d his brooding and irritability had gradually subsided, and he entered into a state of hyperactivity, perhaps a type of self-display or creating in this instance, a Ryder Haggard type of novel, in which he plans to ridicule religion.

A talkative, industrious, smiling, individual, who will play games, may not be cheerful, but merely trying to cover what is, however, expressed in disguise in his creations and resentment, as in the case of the above patient.

The case of Mr. W., a state of hallucinatory depression, which existed for three months previous to admission, plotted the following curve:

At times he showed a negative type of resistance, refusing to comply with the nurses' requests. The patient had delusions of self-depreciation, impending punishment and destruction, with aural and visual hallucinations. He was very anxious about his kidneys and heart, and very apprehensive about the safety of his family. He believed they had deserted him, or that they were dead or dying, etc. Strangely enough he showed little tension, and never picked or rubbed himself. This status gradually disappeared, he became interested in games, read a little, began to talk, by the 19th he was smiling, and the next day seemed quite cheerful. By the 22d he was industrious, and by the 25th had practically quit brooding about his sins. His expressions through June continued within the normal. The appetite and sleep curves showed interesting, quite parallel variations.

Mr. T., a case of manic-depressive insanity in a 19 year old boy. Shows a series of interesting upheavals of the manic type, but occasionally tinged with depressive tendencies at the same time. His upheaval had a sudden onset following a period of exhilaration of nine days and a conflict with a negro on February 27. For four weeks his inhibitions seemed to be at a very low stage. This state gradually subsided, although the tendency still showed in his capriciousness during the first two weeks in April. Suddenly, seemingly out of a blue sky, on the 16th of April, a second upheaval occurred. The cause was probably an attendant who secretly teased him. This second upheaval quickly subsided until the 5th of May. The day previous his physician apparently aroused him through questioning him about his masturbation. The cause of the last upheaval was not learned. When this one subsided he determined to control himself, and succeeded quite well for the following two weeks, when he was removed by his people.

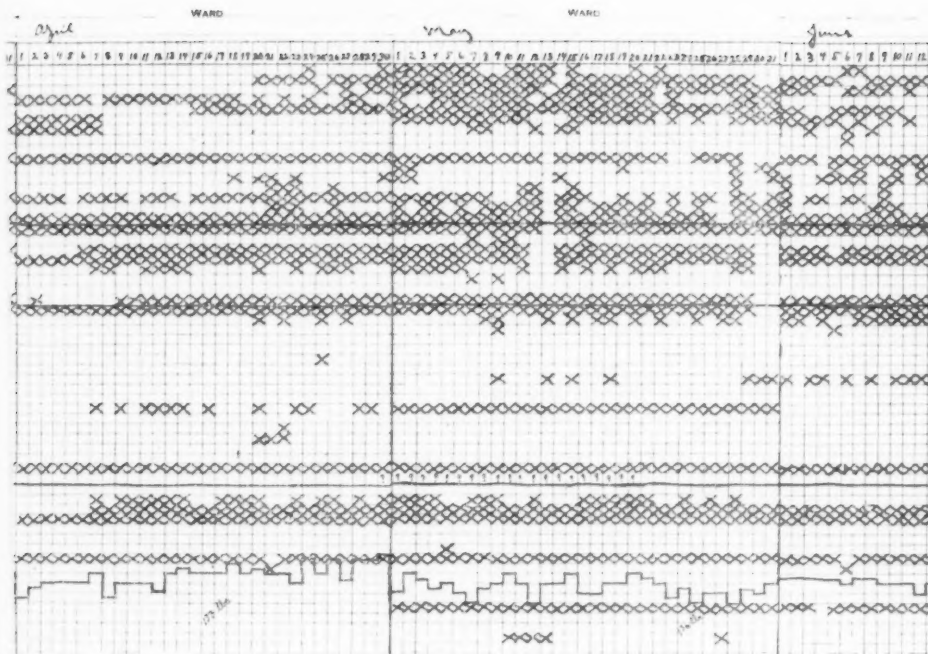
The sleep curve varied tremendously with his expansive-reactionary states, and decreased with the increase of his manic curve.

The chart shows how a tremendous wave of energy could not be inhibited or controlled, but expressed itself through a generally diffuse wave of psychomotor discharge and incoordination of thought.

Mr. C., a young man of 22, presented an interesting status which for several months could not be satisfactorily differentiated as a schizophrenic or manic depressive. He gave a questionable history of "feeling bad" for a year or more previous to the onset. This trend was relieved by a circumcision. In November, 1914, he presented a persistent difficulty to accommo-

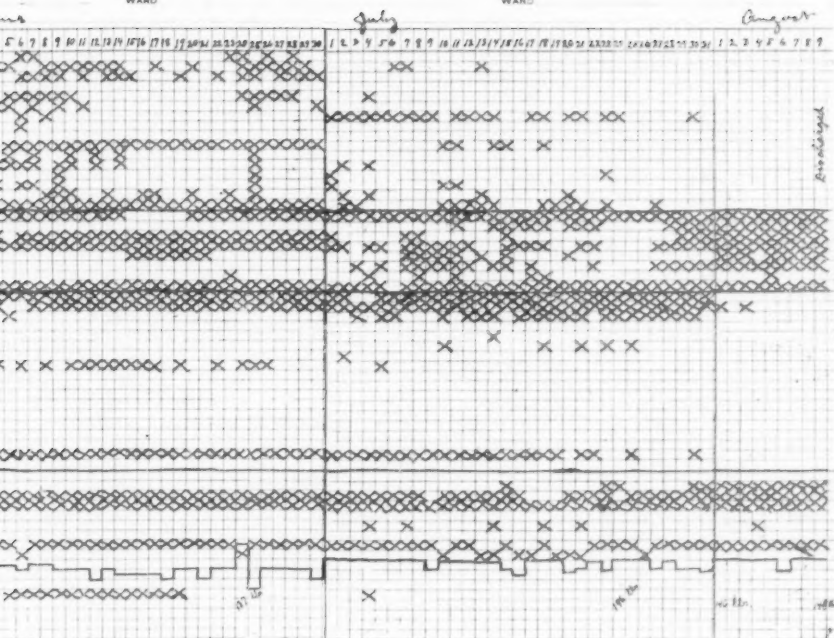
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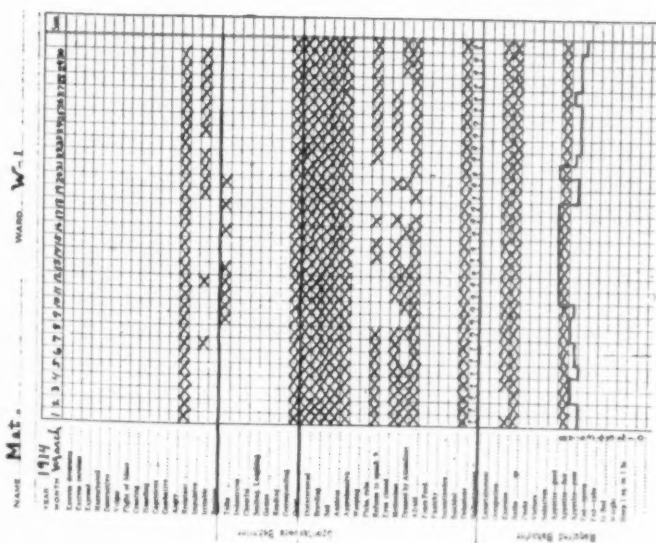
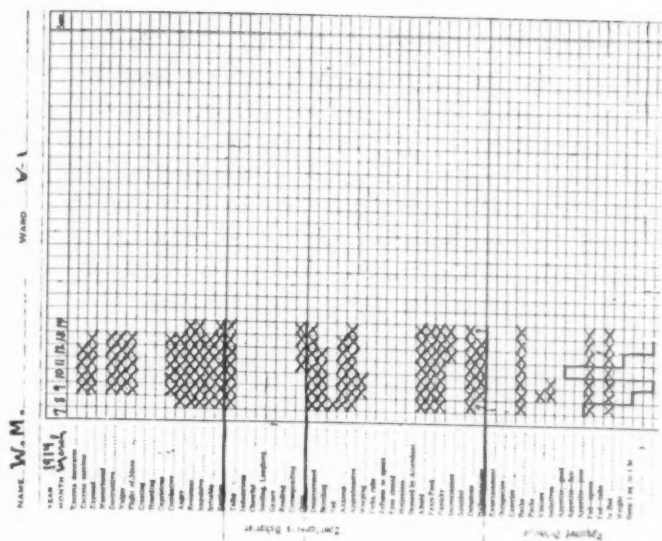
date himself to his work and employer. Gradually he developed suspicions and odd ideas of persecution. His reaction was an overactivity, tendency to elation, use of queer phrases which seemed to be symbolical, and yet were probably quite relevant to his troubles though slangy in their phraseology. About January 18, he was no longer able to coordinate well or adapt himself to the quite precise requirements of his work. Then he developed auditory, visual and tactile hallucinations which he seemed to retain more or less throughout March and May; although this could not be positively affirmed. Much of his behavior was characterized by an uninhibited capriciousness, mannerisms, incoherent, rather symbolical thinking, resentfulness, and at times an unbridled eroticism.

During March this trend was very marked. It subsided somewhat during the middle of April and was most violent during the last of April, May and early June, when his behavior gradually changed to one of excessive inhibition, depression and uneasiness though curiously enough almost daily it was mixed with brief, little flights of capriciousness and impulsiveness. These trends finally disappeared and a quite normal readjustment was maintained until his discharge. The patient was never accessible enough to satisfactorily explain his symbolism and distinguish the material resulting from his schizophrenic tendency, and that of the manic-depressive reactions. The picture of the chart predominantly shows the manic-depressive type of behavior.

Mr. M., a case of dementia præcox, had already established a catatonic defense when this chart was started, but the type of defense and its unvarying persistence is recorded here. Only one month is shown, but it continued through a second month, when he was removed. This chart is self-explanatory. He entertained delusions and hallucinations, but they could not be elicited after his defense was well established. He is marked "talks" on certain days, because he spontaneously asked to go home. His fixed attitude of disinterestedness, brooding, sadness, anxiety and apprehensiveness characterized this catatonic defense and seemed to be impregnable.

Mr. W. M., a case of acute schizophrenia, shows a most unusual and regrettably brief behavior chart because of death. He was in a state of panic when admitted to the clinic. The chief topic elicited which seemed to have any bearing upon his mental state was his prolonged struggle against homosexuality and oral perversions. When he entered he was in a state of extreme fear of sexual assault, injury, and later of being murdered. He seemed to feel that he was unable to control himself any longer. He said he had been fighting this tendency all his life. His panic and struggles continued despite all efforts to control them, and he died on the seventh day in a state of profound exhaustion and vasomotor collapse.

In this case the state of acute schizophrenia plotted very interestingly, showing a marked disassociation of instinctive tendencies which usually regulate one another.



*Conclusion.*—The striking dissimilarity of the curves plotted for the various psychoses suggests that after further data are accumulated, suitable points isolated, and arranged in the most comprehensive series for the problems to be covered, perhaps a chart may be constructed which will aid materially in the classification of cases. Certainly the record of the case can only become more interesting and better clarified by an accurate chart record appended to the case history. Additional facts about behavior may also be gathered which will give us more insight into the more obscure biological principles determining behavior.

## THE COLLOIDAL GOLD AND OTHER TESTS APPLIED TO THE SPINAL FLUID IN PSYCHIATRY.\*

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Since Lange published his paper in 1912 on the colloidal gold reaction in cerebrospinal fluids a number of papers have appeared. The foundation for the test was laid by Zsigmondy<sup>1</sup> in 1901. During his extensive studies of the action of colloidal gold solution he found, among other things, that certain proteids in definite amounts prevented the precipitation of gold in the presence of an electrolyte. He determined the gold number of different proteins by finding the number of milligrams of protein which was just sufficient to prevent the precipitation of 10 cc. of colloidal gold of a percentage of 0.0053 in the presence of one cc. of 10 per cent sodium chloride solution. By this method the purity or quantity of a protein in solution can readily be determined.

The nature of the protein in cerebrospinal fluid has been the subject of study by a number of workers. Lange applied the method of Zsigmondy, but found that the protein, instead of protecting the gold from precipitation, actually caused precipitation when an abnormal amount was present, as usually found in paresis, or cerebrospinal syphilis. He furthermore demonstrated that this precipitation was quite characteristic of paresis, the reaction taking place within certain dilution limits. This test has since been used quite extensively in the differentiation of syphilitic from non-syphilitic diseases of the cerebrospinal axis.

Among other observers who have reported a series of cases in which the reaction was used are Grulee and Moody,<sup>2</sup> Kaplan,<sup>3</sup> Miller and Levy,<sup>4</sup> and Lee and Hinton.<sup>5</sup> Miller and Levy conclude that the reaction "has no advantage over known laboratory procedures in the diagnosis of congenital syphilis," that the "reac-

\* Read before the Pittsburgh Neurological Society, January 16, 1915.

tion in secondary and tertiary syphilis is inconstant," and that "the positive reactions observed in the majority of cases of tabes and cerebrospinal syphilis are not characteristic." They are of the impression, however, that the reaction peculiar to paresis is sufficiently constant to warrant its use as an aid in the differentiation of this condition from others with which it might be confused.

In applying the colloidal gold and other tests to a series of spinal fluids at the Warren State Hospital, the following technique was carried out: For the gold test all glassware was washed in strong hydrochloric and nitrohydrochloric acid, followed by rinsing in distilled and doubly distilled water and thorough drying in the hot-air oven. All measuring glassware was certified. Reagents were prepared as follows:

Distilled Water: Distilled water was doubly distilled in glass, a cork stopper, *not rubber*, closing the flask.

Sodium Chloride Solution: A 4/10 per cent solution of sodium chloride (Merck Blue Label) in freshly doubly distilled water.

Gold Chloride Solution: A 1 per cent solution of gold chloride (Merck or A. H. T. Co.) in freshly doubly distilled water.

Potassium Carbonate Solution: A 2 per cent solution of potassium carbonate (Merck Blue Label) in freshly doubly distilled water.

Formaldehyde Solution: Baker's formaldehyde solution was diluted with freshly doubly distilled water to the point whereby 1 per cent formaldehyde content was obtained.

Colloidal Gold Solution: Ten cc. of gold chloride solution and 10 cc. of 2 per cent potassium carbonate solution were added simultaneously to one liter of water at 60° centigrade. The temperature of the water was then rapidly brought to 90° by the use of two Meker burners. While the fluid was agitated 10 cc. of 1 per cent formaldehyde solution were added slowly. The resultant fluid had a deep red color, free from any bluish or purplish tint in all dilutions, had no sheen and was perfectly clear and transparent. It was not dialysable and was not affected by boiling. Such a solution will keep indefinitely; *i. e.*, a bottle prepared four years ago while one of us was studying the gold numbers of serum proteins is apparently unchanged.



The cerebrospinal fluid to be examined was obtained in the following manner:

Nickel needles free from all corrosion were used after being boiled in distilled water and rinsed in sterilized doubly distilled water. The fluid after lumbar puncture was collected in sterilized test tubes previously cleaned with hydrochloric acid, distilled and doubly distilled water. Miller and Levy recommend the use of platinum needles washed in water, alcohol and ether, and sterilized by dry heat. We have tried both methods and obtained the same results. Since simply boiling and rinsing can be done on the wards with the saving of much time, we adopted that procedure. The fluid must be free from blood. Sterile fluids may be kept at least six days on ice without affecting their properties so far as the gold reaction is concerned.

The technique of the gold test was carried out as follows:

Eleven test tubes are placed in a rack. The first receives 1 8/10 cc. of 4/10 per cent sodium chloride solution, and the other tubes, 1 cc. each. To the first tube is added 2/10 of a cc. of the spinal fluid to be examined. The fluid and salt solution are well mixed and the pipette thoroughly washed by the mixture, and 1 cc. is transferred to the second tube and well mixed. One cc. of this mixture is then carried from the second to the third tube and so on to the tenth tube. The extra cc. in the tenth tube is discarded. To each tube is now added rapidly 5 cc. of the colloidal gold solution, and each thoroughly mixed. The tests were made in the afternoon or evening and the results read in the morning. Final readings cannot be made by artificial light.

Complete precipitation of the gold with a clear, colorless, supernatant fluid was recorded as five; pale or grayish blue discoloration of the fluid as four; blue as three; lilac or purple as two; red-blue as one, and no change of color as zero.

In addition to the colloidal gold test, a Wassermann reaction, Noguchi butyric acid test, cell count and albumen estimation were made on each fluid.

The albumen content was approximated as follows: Test tubes one cm. in diameter and 10 cm. in height, and having flat bottoms were employed. They were calibrated by adding to each 1 cc. of distilled water from a certified burette and those showing the same

height of column of water were selected. One cc. of spinal fluid was placed in a test tube and heated almost to the boiling point. One-tenth cc. of 33 per cent trichloroacetic acid was then added, and thoroughly mixed with the above. Effervescence followed for a few moments. At the end of two hours the height of the column of flocculent precipitate was measured and the results recorded in terms of 2 mm. units. Thus if the column was 8 mm. high it was recorded as four; if six, as three, and so on. If there was no precipitate and the fluid was opaque it was marked as Op, and where there was no cloudiness, as O.

We have in our series of cases upon which this report is based 198 individuals suffering from different psychoses, divided as follows:

Cerebrospinal syphilis (focal symptoms) .....	3
Paresis .....	34
Dementia præcox .....	98
Manic depressive .....	25
Epilepsy .....	12
Arteriosclerosis (cerebral) .....	17
Unclassified .....	9

Upon this number there were made in all 239 separate punctures and examinations of the spinal fluid, which, in addition to the "goldsol" test, were also subjected to the scrutiny of the Wassermann reaction, estimation of the globulin content by the Noguchi butyric acid method, cell count, and volumetric approximation of albumin.

## CEREBROSPINAL SYPHILIS.

No.	Wass. bld.	Wass. fld.	Globulin.	Cells.	Albumin.	Gold reaction.	Duration.	Remarks.
12	+	+	+	0	3	42332000000	1 yr.	Mute, filthy, optic atrophy. See 96.
96	..	-	+	2	0	55543200000	.....	Second reaction. See 12.
18	+	+	+	0	1	55554200000	4 yrs.	Marked dementia, bedridden. See 106.
105	..	+	+	0	Op	56553321000	.....	Second reaction. See 18.
4	+	+	+	0	3	54432210000	4 yrs.	Feeble, marked dementia, complete optic atrophy. See 242.
242	..	+	+	2	2	55554310000	.....	Second reaction. See 4.

## PARETICS.

No.	Wass. bld.	Wass. fld.	Globulin.	Cells.	Albumin.	Gold reaction.	Duration.	Remarks.
19	+	+	+	0	1	55543100000	1½ yrs.	Grandiose, feeble, ambulant. See 102.
102	..	+	+	0	Op	55554210000	.....	Second reaction. See 19.
20	—	—	—	0	0	11110000000	2 yrs.	Demented, feeble, ambulant. See 106.
106	..	—	—	0	0	11110000000	.....	Second reaction. See 20.
21	+	—	+	3	1	12321000000	4 yrs.	Grandiose, demented, ambulant. See 112.
112	..	—	+	2	1	01232000000	.....	Second reaction. See 21.
25	+	+	+	110	1	54443100000	3 yrs.	Grandiose, ambulant. See 95.
95	..	+	+	200	Op	55555542100	.....	Second reaction. See 25.
26	+	+	+	1	1	55543100000	2½ yrs.	Partial remission. See 93.
93	..	+	+	0	3	55555420000	.....	Second reaction. See 26.
27	+	+	+	3	0	55554310000	4 yrs.	Grandiose, ambulant. See 100.
100	..	+	—	6	Op	55554100000	.....	Second reaction. See 27.
29	+	+	+	260	0	43321000000	2 yrs.	Grandiose, ambulant, paranoid ideas. See 101.
101	..	—	+	200	Op	55531000000	.....	Second reaction. See 29.
98	+	+	+	2	Op	55555431000	5 yrs.	Combined with manic depressive, partial remission, Swift-Ellis treatments. See 229.
229	..	+	+	10	4	55555431000	.....	Second reaction. See 98.
74	+	+	+	1	Op	55555553100	1 yr.	Grandiose, beginning remission, Swift-Ellis treatments. See 228.
228	..	+	+	3	4	55555543100	.....	Second reaction. See 74.
73	+	+	+	0	Op	55555310000	2 yrs.	Demented, ambulant, Swift-Ellis treatments. See 238.
238	..	+	+	2	1	55555421000	.....	Second reaction. See 73.
72	+	+	+	2	Op	55555432000	1 yr.	Partial remission, Swift-Ellis treatments.
23	—	+	—	0	0	22220000000	2 yrs.	Demented, depressed, ambulant. See 230.
230	..	—	—	0	2	00121000000	.....	Second reaction. See 23.
17	+	+	+	0	0	55543100000	13 yrs.	Demented, bedridden.
1	+	+	+	4	2	55543210000	2 yrs.	Grandiose, ambulant, demented. See 8.
8	..	+	+	3	2	55554300000	.....	Second reaction. See 1.
2	+	+	+	30	4	55554310000	3 mos.	Nihilistic, depressive ideas, demented. See 245.
3	+	+	+	110	4	55555410000	.....	See 245.
5	+	+	+	30	2	55554320000	3 yrs.	Contracted and bedridden. See 108.
108	+	+	+	110	Op	55555431000	.....	Second reaction. See 5.
6	+	+	+	0	1	55554300000	5 yrs.	Demented, feeble. See 123.
123	..	+	+	0	Op	55555400000	.....	Second reaction. See 6.
7	+	+	+	0	1	55554310000	2 yrs.	Demented, feeble, Swift-Ellis treatments, with no noticeable results. See 107.
107	..	+	+	2	0	55554311000	.....	Second reaction. See 7.
9	+	+	+	6	1	55543200000	2 yrs.	Demented, bedridden. See 58 & 111.
58	..	+	+	2	Op	55555421000	.....	Second reaction. See 9 & 111.
111	..	+	+	3	3	55554200000	.....	Third reaction. See 9 & 58.
10	+	+	+	0	4	55555432000	2 yrs.	Grandiose, ambulant. See 92.
92	..	+	+	2	2	55555543100	.....	Second reaction. See 10.
11	+	+	+	6	4	55555420000	1 yr.	Demented, bedridden. See 163 & 237.
163	..	+	+	40	4	55555531000	.....	Second reaction. See 11 & 237.
237	..	+	—	3	1	55555421000	.....	Third reaction. See 11 & 163.

## PARETICS—Continued.

No.	Wass. bld.	Wass. fld.	Globulin.	Cells.	Albumin.	Gold reaction.	Duration.	Remarks.
13	+	+	+	150	1	55555432000	1 yr.	Demented, ambulant.
14	+	+	+	4	4	55555430000	2 yrs.	Demented, feeble. See 104.
104	..	+	+	3	Op	55554321000	.....	Second reaction. See 14.
15	+	+	+	0	2	55554310000	2 yrs.	Demented, ambulant. See 103.
103	..	+	—	70	Op	55554210000	.....	Second reaction. See 15.
16	+	+	+	1	4	55555431000	4 yrs.	Demented, ambulant. See 94.
94	..	+	+	0	4	55555554200	.....	Second reaction. See 16.
245	+	+	+	3	3	55551100000	.....	Second reaction. See 3.
99	+	+	+	0	0	55555542000	1 yr.	Grandiose, ambulant. See 165.
165	..	+	+	120	4	55555431000	.....	Second reaction. See 99.
142	—	+	+	330	4	55555554310	1 yr.	Remission.
154	+	—	+	10	4	55454310000	5 yrs.	Demented, ambulant.
166	+	+	+	0	4	55554210000	3 "	Grandiose, ambulant. See 233.
233	..	+	+	6	2	55555421000	.....	Second reaction. See 166.
168	+	+	+	1	4	55554410000	2 yrs.	Grandiose, ambulant, violent. See 236.
236	..	+	—	3	1	55554320000	.....	Second reaction. See 168.
160	+	+	+	4	4	55555541000	5 yrs.	Demented, bedridden. See 231.
231	..	+	+	4	4	55555542100	.....	Second reaction. See 169.
170	+	+	+	0	4	55554410000	2 yrs.	Demented, bedridden. See 234.
234	..	+	+	0	2	55555432000	.....	Second reaction. See 170.
232	+	+	+	150	4	55555544210	5 yrs.	Tabetic, grandiose, ambulant.

## DEMENTIA PRÆCOX.

No.	Wass. bld.	Wass. fld.	Globulin.	Cells.	Albumin.	Gold reaction.	Duration.	Remarks.
24	+	—	—	2	0	11000000000	4 yrs.	Deluded, moderately demented. See 114.
114	..	—	—	0	0	01100000000	4 "	Second reaction. See 24.
28	—	—	—	1	0	01100000000	8 "	Deluded, mildly demented, capable worker.
30	—	—	—	1	0	11000000000	1½ "	Distinctly paranoid, mildly demented.
31	—	—	—	0	0	11100000000	12 "	Deluded, moderate dementia.
32	—	—	—	0	0	11060000000	2½ "	Deluded, seclusive, marked dementia.
33	—	—	—	0	0	01100000000	10½ "	Deluded, moderate dementia, fair worker.
35	—	—	—	0	0	11110000000	1 yr.	Distinct paranoid trend, mild dementia.
38	—	—	—	0	0	11100000000	1 "	Paranoid showing marked improvement.
39	—	—	—	0	0	14430000000	7½ yrs.	Deluded, moderate dementia, fair worker.
40	—	—	—	1	0	13222000000	3 "	Deluded, seclusive, moderate dementia.
41	—	—	—	0	1	01222000000	2 "	Mute, negativistic, untidy.
133	—	—	—	0	Op	00100000000	1 yr.	Seclusive, apprehensive.
42	—	—	—	0	0	12211000000	11 yrs.	Paranoid delusions, mild dementia, fair worker.
43	—	—	—	0	0	12210000000	2 "	Imbecile, hypochondriacal ideas, mildly demented.
44	—	—	—	3	0	12210000000	5 "	Paranoid delusions, mild dementia, capable worker.

## DEMENTIA PRECOX—Continued.

No.	Wass. bld.	Wass. fl.	Globulin.	Cells.	Albumin.	Gold reaction.	Duration.	Remarks.
45	—	—	—	0	1	12210000000	1 yr.	Deluded, negativistic, mute.
46	—	—	—	0	0	12210000000	2 yrs.	Deluded, unoccupied, mild dementia.
47	—	—	—	0	0	12210000000	2 "	Paranoid delusions, mild dementia, unoccupied.
50	+	—	—	0	0	12321000000	5 "	Impulsive, deluded, mild dementia.
60	—	—	—	0	Op	01211000000	18 "	Paranoid trend, mild dementia, capable worker.
115	—	—	—	0	0	01110000000	5 "	Marked dementia, catatonic.
116	—	—	—	0	0	01110000000	4 "	Marked dementia, catatonic.
118	—	—	—	0	0	11100000000	4 "	Imbecile, mute, unkempt, demented.
119	—	—	—	1	0	11100000000	17 "	Marked dementia, catatonic.
120	—	—	—	1	0	11210000000	15 "	Unkempt, deluded, demented.
121	—	—	—	1	0	11110000000	13 "	Marked dementia, catatonic.
178	—	—	—	0	1	00000000000	8 "	Deluded, moderately demented, capable worker.
213	—	—	—	0	1	11110000000	2 "	Deluded, troublesome, mildly demented.
122	—	—	—	1	0	00100000000	6½ "	Deluded, unoccupied, moderately demented.
124	—	—	—	0	0	01221000000	23 "	Mute, unkempt, unoccupied.
125	—	—	—	0	0	00100000000	17 "	Deluded, unoccupied, moderately demented.
126	—	—	—	0	0	12221000000	6 "	Mute, unkempt, unoccupied.
127	+	—	—	0	0	12222000000	36 "	Mute, unkempt, unoccupied.
128	—	—	—	0	0	01110000000	10 "	Deluded, unsocial, unoccupied.
129	—	—	—	0	0	00000000000	12 "	Mute, unkempt, unoccupied.
131	—	—	—	0	Op	11221000000	11 "	Mute, negativistic, untidy, unoccupied.
132	—	—	—	0	0	00110000000	6 "	Mute, unkempt, unoccupied.
134	—	—	—	0	Op	01112100000	5½ "	Imbecile, mildly demented, unoccupied.
135	—	—	—	0	0	11110000000	18 "	Mute, filthy, bedridden.
136	—	—	—	1	1	11220000000	8 "	Deluded, impulsive, demented.
139	—	—	—	0	Op	01220000000	17 "	Deluded, untidy, demented.
140	—	—	—	1	1	11221000000	1 yr.	Deluded, impulsive.
141	—	—	—	0	2	01111000000	15 yrs.	Deluded, unoccupied, demented.
143	—	—	—	1	1	11100000000	34 "	Mute, untidy, unoccupied, demented.
144	—	—	—	2	1	01111000000	12 "	Mute, filthy, negativistic, demented.
145	—	—	—	0	0	01100000000	16 "	Mute, filthy, negativistic, demented.
146	—	—	—	0	0	01110000000	16 "	Mute, filthy, unoccupied, demented.
147	—	—	—	1	0	11220000000	7 "	Mute, filthy, unoccupied, demented.
148	—	—	—	0	0	01100000000	30 "	Mute, filthy, unoccupied, demented.
150	—	—	—	0	Op	11100000000	5 "	Mute, filthy, unoccupied, demented.
151	—	—	—	1	Op	01111000000	15 "	Mute, filthy, unoccupied, demented.
152	—	—	—	1	Op	11110000000	14 "	Mute, filthy, unoccupied, demented.
153	—	—	—	3	2	01100000000	11 "	Mute, filthy, unoccupied, demented.
155	—	—	—	0	0	01110000000	32 "	Mute, filthy, unoccupied, demented.
156	—	—	—	0	0	01111000000	10 "	Mute, filthy, catatonic, demented.
157	—	—	—	0	0	01110000000	1 yr.	Deluded, hallucinated, impulsive, unkempt.
158	—	—	—	0	3	01111000000	3 mos.	Deluded, impulsive, hallucinated, negativistic.
159	—	—	—	0	2	01110000000	1½ yrs.	Deluded, hallucinated, violent.
164	—	—	—	0	1	11110000000	11 yrs.	Deluded, unkempt, fair worker.

## DEMENTIA PRÆCOX—Continued.

No.	Wass. bld.	Wass. fld.	Globulin.	Cells.	Albumin.	Gold reaction.	Duration.	Remarks.
167	—	—	—	0	2	11110000000	20 "	Demented, untidy, catatonic.
171	—	—	—	0	1	11100000000	4 "	Demented, negativistic, deluded.
172	—	—	+	1	4	01122100000	2 "	Mute, demented, unkempt.
173	—	—	—	0	1	01110000000	11 "	Demented, mute, negativistic. See 210.
210	..	—	—	0	2	11110000000	.....	Second reaction. See 173.
177	—	—	—	0	1	11110000000	5 yrs.	Deluded, hallucinated, impulsive, unkempt.
179	—	—	—	0	1	11110000000	10 "	Deluded, mildly demented, unkempt.
181	—	—	—	0	1	01120000000	4 "	Deluded, demented, unoccupied.
182	—	—	—	0	1	11110000000	5 "	Deluded, mildly demented, capable worker.
183	—	—	—	0	3	11110000000	7 "	Deluded, impulsive, unoccupied.
185	+	—	—	0	2	11100000000	2 "	Deluded, unkempt, unoccupied.
186	—	—	—	1	2	11100000000	3 "	Delusions, impulsive, untidy, destructive.
187	—	—	—	1	1	12210000000	12 "	Delusions, impulsive, capable worker.
188	—	—	—	0	1	11110000000	2 "	Imbecile, deluded, depressed.
189	—	—	—	0	1	01110000000	6 "	Moderate dementia, impulsive, deluded, untidy.
196	—	—	—	0	3	01110000000	11 "	Moderate dementia, deluded, unkempt.
197	—	—	—	0	3	01110000000	6 "	Moderate dementia, deluded, impulsive, unoccupied.
198	—	—	—	0	1	11111000000	4 "	Deluded, impulsive, unoccupied, seclusive.
199	—	—	—	1	2	01110000000	4 "	Deluded, unoccupied, impulsive.
201	+	—	—	1	2	01100000000	1 yr.	Deluded, moderate dementia.
202	—	—	—	0	2	01110000000	5 yrs.	Deluded, mildly demented, hallucinated.
204	—	—	—	0	2	00100000000	3 "	Seclusive, deluded, moderately demented.
205	—	—	—	0	3	00111000000	1 yr.	Deluded, hallucinated, moderately demented.
206	—	—	—	0	1	01111000000	9 yrs.	Deluded, impulsive, moderately demented, capable worker.
207	—	—	—	1	1	00110000000	9 "	Deluded, moderately demented.
208	—	—	—	0	1	11110000000	5 "	Paranoid ideas, violent tendency.
209	—	—	—	0	1	11110000000	10 "	Deluded, mildly demented.
211	—	—	—	0	1	11110000000	11 "	Deluded, hallucinated, unoccupied, demented.
212	—	—	—	0	1	11110000000	10 "	Deluded, unoccupied, impulsive, demented.
214	—	—	—	0	1	12220000000	6 "	Numerous delusions, mild dementia.
216	—	—	—	0	1	12110000000	1 yr.	Deluded, moderate dementia.
220	—	—	—	0	1	12220000000	1 "	Imbecile, deluded.
221	—	—	—	12	1	11210000000	1 "	Delusions, mild dementia.
222	—	—	—	0	2	11220000000	28 yrs.	Mute, untidy, negativistic, demented.
223	—	—	—	0	3	01122000000	20 "	Mute, untidy, demented, bedridden.
224	—	—	—	0	3	01120000000	16 "	Mute, filthy, demented, bedridden.
226	—	—	—	0	1	01220000000	35 "	Marked dementia.
162	—	—	—	0	1	11110000000	7 "	Mute, untidy, much demented.
241	—	—	—	0	1	11000000000	5 "	Deluded, destructive and hallucinated.
37	—	—	—	1	0	01334200000	10 "	Deluded, unoccupied, mildly demented.



## MANIC DEPRESSIVE PSYCHOSIS.

No.	Wass. bld.	Wass. fld.	Globulin.	Cells.	Albumin.	Gold reaction.	Duration.	Remarks.
34	—	—	—	0	0	1110000000	6 mos.	Interval.
48	—	—	—	0	0	1432200000	30 yrs.	Depressed. See 109.
109	—	—	—	0	0	0110000000	.....	Second reaction. See 48.
49	—	—	—	0	0	0011100000	18 yrs.	Manic, delusions prominent.
51	—	—	—	0	0	0111000000	19 "	Depressed.
52	—	—	—	1	0	1122210000	41 "	Interval.
53	—	—	—	0	0	0000000000	15 "	Manic.
54	—	—	—	1	0	0122000000	6 "	Depressed.
55	—	—	—	2	0	1222100000	6 "	Hypomaniac.
56	—	—	—	2	0	1222200000	12 "	Mixed type, active.
57	—	—	—	0	0	1233300000	31 "	Manic. See 239.
59	—	—	—	0	Op	1111000000	4 "	Manic.
60	—	—	+	0	Op	0122210000	30 "	Manic.
61	—	—	—	0	Op	0121100000	5 "	Depressed.
62	—	—	—	1	Op	1121000000	6 mos.	Manic.
63	—	—	+	0	Op	1121000000	20 yrs.	Depressed.
64	—	—	+	1	1	0122210000	18 "	Depressed.
65	—	—	—	0	Op	1121100000	7 "	Depressed.
66	—	—	—	0	Op	1222100000	1 yr.	Depressed.
67	—	—	—	2	Op	1122200000	13 yrs.	Interval.
68	—	—	—	0	0	1122100000	14 "	Mildly depressed.
70	—	—	—	0	0	1123211000	9 "	Depressed.
71	—	—	—	1	0	0011000000	19 "	Interval.
87	—	—	—	2	0	1221100000	10 "	Mixed type, active.
88	—	—	—	0	0	1121100000	5 "	Mixed type, depressed.
219	+	—	—	0	1	1111000000	23 "	Interval.
239	..	—	—	1	1	1122200000	.....	Second reaction. See 57.

## EPILEPTICS.

No.	Wass. bld.	Wass. fld.	Globulin.	Cells.	Albumin.	Gold reaction.	Duration.	Remarks.
160	—	—	—	0	2	0111000000	25 yrs.	Grand mal, delusions, mild dementia.
161	—	—	—	0	1	1110000000	24 "	Grand mal, hyper-religious, moderate dementia.
174	—	—	—	0	1	0111100000	15 "	Grand mal, periods great confusion and violence.
176	—	—	—	0	2	1110000000	8 "	Grand mal, marked dementia, bedridden.
184	—	—	—	0	3	1111000000	5 "	Grand mal, imbecile.
190	—	—	—	0	2	1110000000	6 "	Grand and petit mal, imbecile.
200	—	—	—	0	2	1110000000	8 "	Grand mal, mild dementia.
215	—	—	+	0	4	1222200000	20 "	Grand mal, hyper-religious, moderate dementia.
218	—	—	—	0	2	1112100000	9 "	Petit and grand mal, mild dementia.
225	—	—	—	0	2	0012200000	43 "	Grand mal, imbecile.
227	—	—	—	0	1	0122000000	19 "	Grand mal, imbecile, bedridden.
149	—	—	—	0	Op	0111100000	25 "	Grand mal, violent, demented.

## ARTERIOSCLEROTICS.

No.	Wass. bld.	Wass. fld.	Globulin.	Cells.	Albumin.	Gold reaction.	Duration.	Remarks.
76	—	—	—	0	1	0012000000	6 yrs.	Feeble, demented.
77	—	—	—	0	0	0122110000	6 "	Feeble, retrograde amnesia, dysarthria.
78	—	—	—	1	0	0122200000	6 mos.	Terminal dementia, bedridden.
79	—	—	—	0	0	0122200000	22 yrs.	Old alcoholic, Korsakow's syndrome.
80	—	—	—	0	0	0122200000	2½ "	Marked dementia, delusions, feeble.
81	—	—	—	0	0	0111100000	3 "	Delusions, dementia.
82	—	—	—	1	0	0112220000	3-5 "	Delusions, dementia.
83	—	—	—	0	0	1243221000	5 "	Hallucinations, delusions, dementia.
84	—	—	—	0	0	1132100000	8 mos.	Hallucinations, delusions, dementia. See 235.
85	—	—	—	0	Op	1222000000	3 yrs.	Depressed, hypochondriacal ideas.
86	—	—	—	0	Op	1122200000	6 "	Hallucinated, deluded, demented.
89	—	—	—	0	4	1221000000	8 "	Hallucinations, delusions, dementia, bedridden.
90	—	—	—	0	Op	0110000000	6 "	Presbyophrenic senile, bedridden.
91	—	—	—	1	0	0120000000	8 "	Demented, bedridden.
113	—	—	—	1	0	0011000000	5 mos.	Acute terminal psychosis, bedridden.
137	—	—	—	0	Op	0011000000	2 yrs.	Delusions, moderate dementia.
138	—	—	—	0	2	0012200000	10 "	Delusions, moderate dementia.
236	..	—	—	1	0	0112210000	.....	Second reaction. See 84.

## UNCLASSIFIED PSYCHOSIS.

No.	Wass. bld.	Wass. fld.	Globulin.	Cells.	Albumin.	Gold reaction.	Duration.	Remarks.
75	—	—	—	0	0	0122100000	8 yrs.	Alcoholic-pseudo paresis, or gen. par. One Swift-Ellis treatment. See 243.
243	—	—	—	0	1	1111000000	.....	Second reaction. See 75.
117	—	—	—	0	0	1111000000	6 mos.	Imbecile, deluded, mild dementia.
130	+	—	—	1	0	1110000000	1 yr.	Alcoholic.
175	—	—	+	0	4	4445440000	1 "	Depressed, unkempt, demented. See 240.
240	—	—	+	0	1	5555441000	.....	Second reaction. See 175.
180	—	—	—	0	2	1111000000	3 mos.	Depressed, deluded.
203	—	—	—	0	2	0111000000	8 "	Alcoholic. Suicidal only when drinking.
217	—	—	—	0	1	1111000000	1 yr.	Depressed, impulsive, violent.
36	+	—	—	1	0	1111000000	2 yrs.	Demented, unkempt, deluded. See 97.
97	..	—	—	0	0	0111000000	.....	Second reaction. See 36.
22	—	—	—	0	0	2222000000	4 yrs.	Alcoholic pseudo-paresis (?), moderate dementia. See 110.
110	..	—	—	0	0	1121000000	.....	Second reaction. See 22.

Diagnosis.	Number of cases.	Number of tests.	Blood.		Spinal fluid.								Colloidal gold.		
			W. R.		W. R.		Globulin.		Cells.		Albumin.		Paretic zone.	Luetic zone.	Non-typical reactions.
			+	—	+	—	+	—	Five or more.	Less than five.	Three or more.	Less than three.			
Cerebrospinal syphilis.....	3	6	3	0	3	0	3	0	0	3	2	1	3	0	0
Paresis .....	34	63	31	3	32	2	32	2	16	18	18	16	31	1	2
Dementia præcox..	98	100	5	93	0	98	0	98	1	97	8	90	0	4	94
Manic depressive ..	25	27	1	24	0	25	3	22	0	25	0	25	0	3	22
Epilepsy.....	12	12	0	12	0	12	1	11	0	12	2	10	0	0	12
Arteriosclerosis....	17	18	0	17	0	17	0	17	0	17	1	16	1	1	15
Unclassified.....	9	13	2	7	0	9	1	8	0	9	1	8	1	0	8

Paretic Zone: Complete precipitation in first three to six tubes.

Luetic Zone: Precipitation confined to the first four or five tubes with the greatest reaction in the third, fourth and fifth tubes. No reaction to ever exceed "4."

A brief résumé of the results obtained in each group of clinical entities is as follows:

Cerebrospinal Syphilis: Three cases, six lumbar punctures. All cases under this heading had a positive Wassermann reaction, previously obtained, upon the blood. Spinal fluids were all positive to the Wassermann reaction and showed plus globulin content. There were no cell counts above three per cu. mm.; albumin was always present in small amounts, and in two of the three cases both showed a heavy precipitation. The colloidal gold reaction evidenced an attainment to the height of "5" upon all tests but one, while this sole exception showed "4."

Paresis: Thirty-four cases, 63 lumbar punctures. Three cases have never evidenced a positive Wassermann reaction upon the blood, although tested several times, and of this number one indeed has never shown a positive result to this test upon the fluid, neither plus globulin, or albumin, nor reaction in the luetic zone to "goldsol." However, this latter individual has all the classic physical signs and mental symptoms of dementia paralytica combined with optic atrophy, and his youngest child, aged 3 years, gives a positive reaction to the Wassermann test upon the blood serum. In the remaining two instances of negative blood there

has been at least one positive Wassermann reaction upon the fluid of each. In this series of cases there are two other individuals who at the present time show no reaction to the Wassermann test upon the spinal fluid, but both of whom have in the past, as shown by our records, reacted positively upon several occasions. Two other patients show each one positive and one negative result for the Wassermann testing of the fluid at different times, and several gave us demonstration of increase in globulin. In but 10 cases of paresis did the cell count exceed 10 per cu. mm., but the low cell count diminishes in point of importance when it is recalled that great variations in count have been recently shown<sup>\*</sup> to exist in all stages of paresis and at different times in the same individual. Albumin was almost constantly found and in frequent instances was present in large amounts. In all but three of the 34 cases the gold solution test showed the attainment of "5," and concerning the three exceptions it should be stated that one was the case mentioned above as presenting all the physical and mental characteristics of paresis, the father of a luetic child, but lacking himself the laboratory confirmation of syphilitic infection. Upon each of the remaining two, fluids were twice taken and examined. In one case "3" was the maximum attained upon both occasions, accompanied by negative Wassermann findings upon the fluid, although this test of the fluid had previously been positive. In the second individual "2" was the highest mark obtained in each examination in conjunction with one positive and one negative Wassermann.

Dementia Præcox: Ninety-eight cases, 100 punctures. Five members of this group were recorded as previously positive to the Wassermann test upon the blood serum, but none of them evidenced the physical signs or mental symptoms peculiar to general paralysis of the insane, and there have been two or more lumbar punctures made upon each individual with negative findings in the fluid. Eight cases evidenced a greatly increased amount of albumin, but only one of these demonstrated any deviation from the normal by the other ordinary reactions, and in that particular instance it was merely an increase in the globulin. There were four cases showing a gold reaction above "2"—one having two "4s" and the other one "4"—but let it be noted that neither fluid showed any positive signs indicating luetic taint. In

a single case of those having a positive Wassermann reaction upon the blood there was finally demonstrated a gold reaction of "3," but no other positive signs were found in the fluid. No case in this group had a cell count exceeding 12 cu. mm., and only one case showed a count exceeding three cells.

**Manic-Depressive Insanity:** Twenty-five cases, 27 punctures. A single member of this group had a previous positive Wassermann reaction upon the blood, but there were no corroborative findings in the cerebrospinal fluid. In no instance was there demonstrated a positive Wassermann reaction upon the fluid, although three cases showed positive globulin tests associated with a slight amount of albumin, but no other signs confirmatory of luetic involvement. Two cells per cu. mm. was the maximum cytologic count. There was very frequently observed a small amount of albumin, but never did this amount exceed "1." Three specimens of fluid gave a reaction to colloidal gold approximating the graduation "3," but subsequent testing of two of these fluids showed no reaction above "2."

**Epilepsy:** Twelve cases, 12 punctures. There was no instance of a positive Wassermann reaction upon either the blood or spinal fluid in any case under this heading. A plus globulin reaction associated with a large quantity of albumin was noted in one specimen, and in another the albumin alone was found in excess. A small amount of globulin appeared to be constant. No pleocytosis was disclosed in any case and the reaction to colloidal gold never exceeded "2."

**Arteriosclerotic Dementia:** Seventeen cases, 18 punctures. No individual of this series showed a positive Wassermann reaction upon either the blood or fluid, an increase of globulin, nor the presence of more than one cell per cu. mm. Although small amounts of albumin were frequently found, in but one case was this present at all in quantity, and this exception occurred in the absence of all other confirmatory signs of lues. The colloidal gold reaction reached the height of "3" or more in two instances, but was unaccompanied by any other manifestations in either fluid, while a second examination in one of these cases showed a rise to "2" only.

**Unclassified Psychoses:** Nine cases, 13 punctures. Two of these cases evidenced a positive Wassermann reaction upon the

blood, but in neither case was it possible to elicit physical signs or obtain any laboratory evidence of an invasion by the syphilitic process of the cerebrospinal axis. The Wassermann reaction was never positive for any of these fluids. One individual showed a positive test for globulin upon two occasions, once being associated with a large amount of albumin, and at both times evidencing a reaction to the colloidal gold to the maximum degree of "5." This particular case has had several previous negative results upon the blood for the Wassermann test, and two negative manifestations for the same procedure upon the spinal fluid, and, while presenting the mental picture of parietic dementia, yet shows very questionable physical signs of this syndrome. In the above group slight amounts of albumin were frequently found. In no case was there demonstrated a cell count exceeding 4 per cu. mm.

#### SUMMARY.

I. In the cases diagnosed clinically as cerebrospinal syphilis the Wassermann reaction upon the spinal fluid was always positive and the colloidal gold test showed a reaction in the parietic zone.

II. In paresis the colloidal gold test was always found positive in cases where the spinal fluid showed a similar reaction to the Wassermann test, in addition to which there is one instance noted in which the fluid Wassermann was negative, but a reaction in the luetic zone obtained by the gold solution.

III. In dementia præcox, manic-depressive insanity, arterio-sclerotic dementia and epilepsy there were no positive Wassermann reactions upon the fluid, and likewise no response to the gold solution in the typical "parietic zone." However, the latter reagent did furnish in eight cases of the 152 examined a reaction within the minor limits of the "luetic zone."

IV. In the unclassified psychoses the colloidal gold and the Wassermann reactions upon the fluid ran a parallel course, except in one case, which showed a negative response to the Wassermann test upon the fluid, but gave a gold reaction in the "parietic zone." This instance is clinically a possible case of paresis.

V. From our work the opinion is drawn that the colloidal gold reaction forms a useful adjuvant to the Wassermann, is apparently as reliable and, in some instances, by reason of positive response



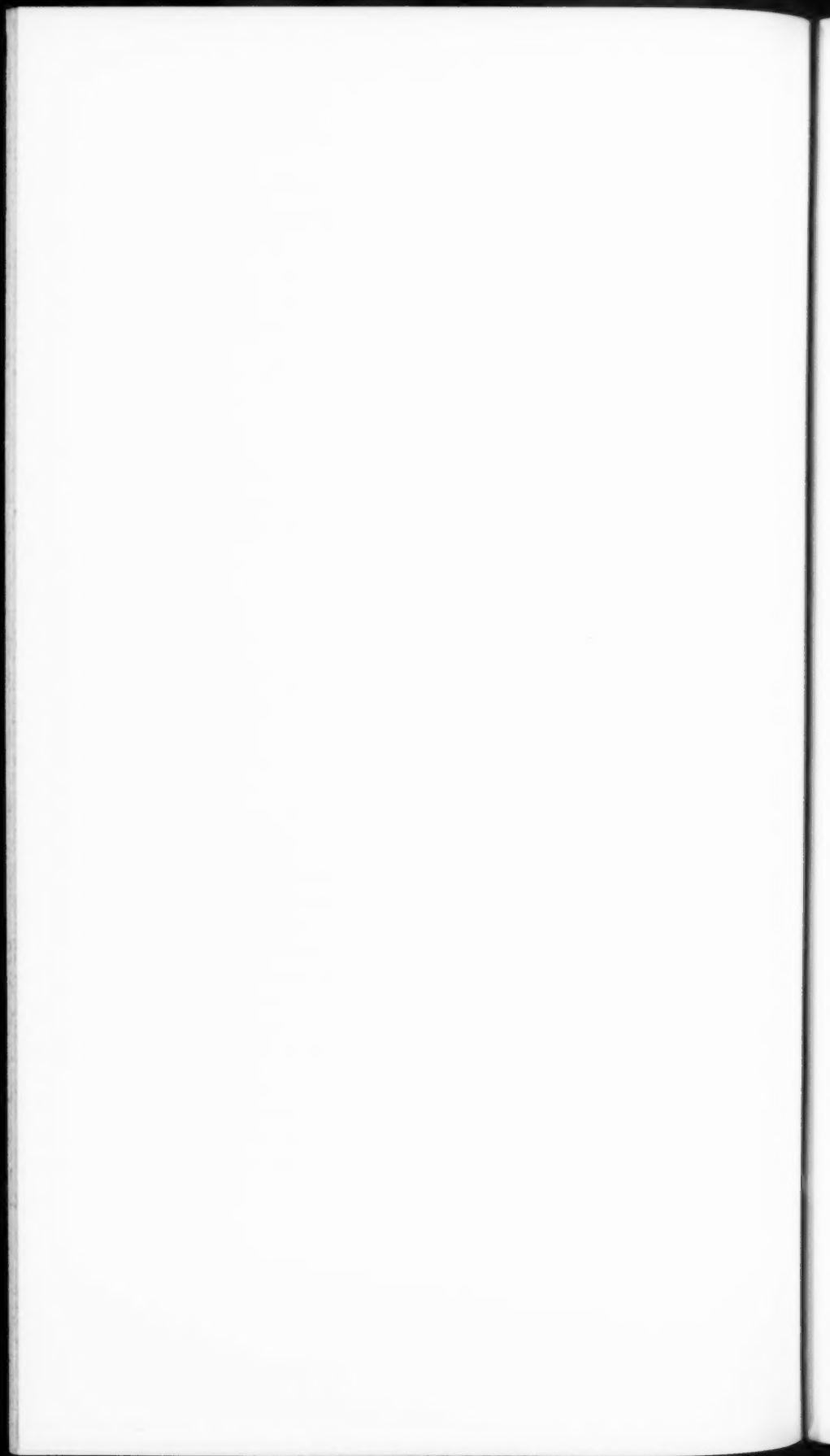
in the absence of the Wassermann in clinically luetic cases, has seemed to point towards the possible appearance of a later positive Wassermann in the suspected individuals.

# REFERENCES.

1. Ztschr. f. amal. Chen., 1901, XL, 697.
2. J. Am. Med. Ass., 1913, LXI, 13.
3. J. Am. Med. Ass., 1914, LXII, 511.
4. Bul. Johns Hopkins Hosp., XXV, 279, 133.
5. Amer. Jour. Med. Sci., CXLVIII, 33.
6. Jour. Nerv. & Ment. Dis., XLI, 686.

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NOTE.—Since the above has gone to press a paper on the same subject by Swalm and Mann has been read at a meeting of the Philadelphia Pathological Society and will appear shortly in the *New York Medical Journal*. Their conclusions are the same as ours.



## Notes and Comment.

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SEVENTY-FIRST ANNUAL MEETING OF THE AMERICAN MEDICO-PSYCHOLOGICAL ASSOCIATION.—The seventy-first annual meeting of the Association will be held at the Hotel Chamberlin, Old Point Comfort, Va., May 11, 12, 13, 14, 1915.

The Secretary, Dr. Charles G. Wagner of Binghamton, N. Y., has issued the following preliminary programme:

### TUESDAY, MAY THE ELEVENTH.

10 A. M.

Invocation.

Organization.

Address of Welcome, Hon. Henry Carter Stuart, Governor of Virginia.

Response.

Reports: Committee of Arrangements, Council, Treasurer, Editors of the AMERICAN JOURNAL OF INSANITY, Committee on History of Institutional Care of the Insane in the United States and Canada.

Appointment of Nominating Committee.

Memorial Notices.

### AFTERNOON SESSION.

2 P. M.

"Institutional Stasis," H. C. Eyman, M. D., Massillon, Ohio.

"Some of the More Recent Problems Arising in the Care of the Insane," James V. May, M. D., Albany, N. Y.

"Recent Extension of Out-Patient Work in the Massachusetts State Hospitals for the Insane and Feeble-Minded," L. Vernon Briggs, M. D., Boston, Mass.; A. Warren Stearns, M. D., Boston, Mass.

"The Advance in Care and Treatment of the Insane in Ontario for the Past Ten Years," J. C. Mitchell, M. D., Brockville, Ont.

### EVENING SESSION.

8.30 P. M.

"State Ownership of the Springs of Saratoga and State Control in Developing and Utilizing Their Facilities," Albert Warren Ferris, M. D., Saratoga Springs, N. Y.

"A Further Study of Brain Anatomy in Manic-Depressive Psychoses," E. E. Southard, M. D., Boston, Mass.

"Methods of Promoting the Nutrition in the Psychoses," Sanger Brown, M. D., Kenilworth, Ill.

## WEDNESDAY, MAY THE TWELFTH.

10 A. M.

Report of Committee on Psychology in the Medical Schools, E. Stanley Abbot, M. D., Waverley, Mass. (Chairman).

"The Value of Routine Laboratory Work in Psychiatry," Paul G. Weston, M. D., Warren, Pa.; Ira A. Darling, M. D., Warren, Pa.

"The Wassermann Reaction in Paresis," Frederic H. Thorne, M. D., Greystone Park, N. J.

"The Dementia Præcox Problem," Henry A. Cotton, M. D., Trenton, N. J.

"Some Practical Tasks in Mental Hygiene," Thomas W. Salmon, M. D., New York, N. Y.

## EVENING SESSION.

8.30 P. M.

Annual Address: "Publicity and the Public Mind," Douglas Southall Freeman, Ph. D., Richmond, Va.

## THURSDAY, MAY THE THIRTEENTH.

10 A. M.

Report of Council on Time and Place of next meeting.

Report of Committee on Diversional Occupation of the Insane, Arthur P. Herring, M. D., Baltimore, Md. (Chairman).

Symposium on Diversional Occupation:

"Occupation for the Insane," Henry P. Frost, M. D., Dorchester Centre, Mass.

"The Therapeutic and Economic Value of Diversional Occupations," Frank M. Mikels, M. D., Greystone Park, N. J.

The following topics will be presented for discussion; each topic will be allowed fifteen minutes for presentation and five minutes for discussion:

(a) "What are the Advantages of an Occupation Schedule?"

(b) "Should Patients be Rewarded for Industrial Occupation?"

(c) "Is an Occupation Teacher Desirable?"

(d) "Should Occupation be Limited to Work Rooms, or Distributed about the Wards?"

(e) "Should There be a Definite Recreation Schedule?"

NOTE.—A large and interesting display of the work of patients in the various hospitals will constitute the Industrial Exhibit. Exhibits will be classified according to various kinds of work shown. Certificates of award will be given.

## AFTERNOON SESSION.

2 P. M.

Report of Committee on Immigration, Edward N. Brush, M. D., Towson, Md. (Chairman).

"Recidivation in Insanity, with Considerations on Classification," George Villeneuve, M. D., Montreal, Que.

- "Anatomical Researches, Massachusetts School for Feeble-Minded," Walter E. Fernald, M. D., Waverley, Mass.; E. E. Southard, M. D., Boston, Mass.; A. E. Taft, M. D., Cambridge, Mass.
- "Twenty Years After, or the Final Results of Two Hundred and Fifty-One Gynecological Operations," W. J. Robinson, M. D., London, Ont.
- "A Survey of 'Defective Delinquents' Under the Care of the Massachusetts State Board of Insanity," A. Warren Stearns, M. D., Boston, Mass.

## FRIDAY, MAY THE FOURTEENTH.

10 A. M.

Report of Committee on Statistics, Thomas W. Salmon, M. D., New York, N. Y. (Chairman).

"The Relation of Angular Gyrus Lesions to Catatonia," E. E. Southard, M. D., Boston, Mass.; M. M. Canavan, M. D., Boston, Mass.

"Some Neglected Phases of Immigration in Relation to Insanity," A. J. Rosanoff, M. D., Kings Park, N. Y.

"Effects of an Analysis of a Case of Involution Melancholia Seven Years Ago," Tom A. Williams, M. D., Washington, D. C.

"Psychoses, Psychoneuroses and Mental Deficiency in 6000 Cases Considered Especially from the Standpoints of Sex and Etiological Incidents," Alfred Gordon, M. D., Philadelphia, Pa.

Report of Committee on Resolutions.

Introduction of President-Elect.

Adjournment.

NOTE.—The Committee of Arrangements will provide entertainment for Wednesday afternoon and Thursday evening. The State Hospitals of Virginia have made an exceedingly liberal appropriation for the entertainment of our members, and have designated a committee to arrange the details. These will include a ladies' reception, an afternoon boat-ride about the harbor, a dress parade in the Fort, a visit to the Colored Industrial School and a special entertainment at the Chamberlin. Besides a fine literary programme, our members are sure of a delightful time socially.

The Secretary says:

Authors of papers are requested to provide copies for the use of the Secretary in the preparation of the *Transactions*. These copies should be mailed to the Secretary in advance of the meeting, or handed to him immediately after the papers are read. By doing so, much delay may be avoided and the *Transactions* will be in the hands of the members at a comparatively early date after the meeting at which the papers are read.

To this the editors of the JOURNAL would add the request that papers be furnished in the form in which it is desired that they appear in print. Too often authors of papers make such radical changes in their contributions in reading proof, that much of the

article must be practically reset. This recomposition involves considerable expense to the JOURNAL and the Association, which would be wholly obviated were authors to revise their contributions in manuscript.

THE VINDICATION OF DR. BANCROFT.—Reference was made in the January number of this JOURNAL to the action of the board of control of New Hampshire in calling for the resignation of Dr. Charles P. Bancroft, and his summary removal from the position of medical superintendent of the New Hampshire State Hospital at Concord, upon his declination to accede to the demand for his resignation. Evidently the new Governor of New Hampshire, who assumed office early in January last, has a clearer conception of what constitutes fair dealing than did his predecessor, for among the earliest acts of his administration Governor Spaulding appointed a commission to investigate the removal of Dr. Bancroft. That commission has made a full inquiry, and given a patient hearing to all parties concerned, and we extract from *The Union* of Manchester, N. H., the following editorial comments upon the report of the commission:

The special commission which was appointed by Governor Spaulding to investigate the removal of Dr. Bancroft as superintendent of the state hospital by the board of control during Governor Felker's administration has filed its findings. They constitute the most complete possible exoneration of Dr. Bancroft of all the various charges made against him, which were alleged to constitute the reason for his summary removal. More complete justification of a competent and conscientious public servant, who had suffered grievous wrong, could hardly have been possible. The action of the board of control, at least the majority which voted the dismissal of the superintendent, is left by the report without approval in a single particular. The sole criticism of the hospital management which is to be found in the report is directed at a subordinate officer, who is charged with attempting to carry water on both shoulders, trying to curry favor with the majority members of the board by criticising Dr. Bancroft, and with the superintendent by criticisms of the board. . . . But aside from any feeling of elation on the part of Dr. Bancroft and those who supported him in the controversy the result attained should cause statewide satisfaction because of the direct bearing it must have upon the treatment which shall be accorded public servants of New Hampshire, occupying such positions as that occupied by Dr. Bancroft, in the future.

One of the most reprehensible and most objectionable features of the course pursued by the majority members of the board of control was the



attitude they assumed toward the encumbent of such an office as the one in controversy. Their point of view seemed to be that it was appropriate and correct to treat a man occupying such a post precisely as they would have treated a hired man. This strange attitude was maintained by the majority without concealment. They seemed to be utterly lacking in appreciation of the rights of the man accused, to a fair hearing, or the slightest opportunity to meet the charges made against him. He was given the opportunity only to resign, or be summarily dismissed. It is fortunate for the welfare of the public service of the state that Dr. Bancroft was too high-spirited and too self-respecting a man to endure such treatment.

The vindication of Dr. Bancroft is not alone a personal victory, splendid and deserved as that is, but it is even more a victory for fair treatment and proper consideration of the public servants of the state at the hands of those who are placed in authority over them. The rules of fair play and decency which govern in private affairs are exactly as applicable when public administration is concerned, and by far the greater value of the report of this special commission lies in the influence it will have upon the public service in the future, than in the personal victory which it represents for the man wronged in this particular case.

Whether Dr. Bancroft can be induced to return to his old position or not, or whether indeed he desires to again place himself in a position where, by another administration and another board of control, he may be subjected to a like indignity, we are not informed.

Under any circumstances the lessons to be learned are clear, and one of them, and by no means the least important, is that the experiment of placing the direction of state institutions under the unrestricted charge of so-called boards of control is one which should be tried only with extreme caution and be surrounded by most carefully thought-out safeguards. As was intimated in our previous comments upon the situation, boards of control sometimes lack self-control—and, as may be added, sometimes afford a most convenient means of turning the patronage of the charitable institutions of the state to the benefit of a political machine, as has been done in one state at least.

It is clear, moreover, that the subordinate officer who attempted "to carry water on both shoulders" has lost whatever usefulness he had in the position which he has filled, whoever may be placed at the head of the hospital at Concord.

The successors to the board of control which permitted a subordinate officer to make reports over the head of his superior officer should see to it that its rules are so modified as to make the

medical superintendent the sole responsible authority in the hospital and the only channel through which reports from any department of the institution shall reach it. If it and the governor read attentively the testimony taken by Governor Spaulding's commission, and its conclusions, it can consistently reach no other decision.

PROPOSED IMPROVEMENTS IN THE CARE OF THE INSANE IN WEST VIRGINIA.—Governor Hatfield of West Virginia, in his message to the legislature, devoted much space to a consideration of the responsibilities which the state faced in providing for proper care and treatment of the insane, and the necessity, which must be recognized by all familiar with the situation, of making radical changes in the methods which had heretofore been followed in West Virginia.

At the request of the governor, Dr. Carlos F. MacDonald made a thorough inspection of the state hospitals and a study of the statutes of the state bearing upon the care of the insane and the conduct of the state hospitals, and the recommendations made by the governor are based, he says, largely upon Dr. MacDonald's report.

Attention is called to the deficiency both in quantity and quality of land in connection with the three state hospitals at Weston, Spencer and Huntington. The hospital at Weston, though it has 335 acres of land, has but 12 acres under cultivation, the remainder, with the exception of the grounds about the buildings, being steep hillsides only suitable for grazing. At Spencer 20 of the 184 acres are in garden, 20 in lawns, 20 in woodland, and the remainder only useful for grazing purposes. At Huntington the entire estate is but 30 acres, and that hilly and unsuitable for cultivation.

It would appear as if those who had located these institutions had felt that land suitable for no other purpose was good enough for the state hospitals. As the governor remarks: "It can be seen in an instant that there was a lamentable lack of foresight in the selection of sites for these institutions."

The governor deprecates changes in hospital management for political reasons, and says that changes made by changing state administrations for purely political reasons "only result in disorganization and a lowering of the standard of efficiency."

As a basis upon which the system of state care should be fixed, the message says:

Our laws should be completely rewritten and brought up to the standard. We should have a lunacy commission, with a commissioner of lunacy at its head, who is versed in the care and treatment of the insane. This scheme could well be worked out in connection with the board of control by requiring one of its members as now constituted to possess the attainments required for a competent lunacy commissioner, whose duty it would be to take charge of all of the insane and prevent their incarceration in county jails and prisons, and to see that they are promptly and safely cared for at one of the institutions; or, the board could be increased to four members, with the requirement, as stated, that one of its members be eligible to fill the place as commissioner of lunacy.

A reception ward or psychopathic building with proper appliances for treatment in connection with each hospital is recommended, as are also work shops and increased opportunity for out-door occupation, which may, under conditions incident to the unfortunate sites selected, be difficult to provide.

A very wise suggestion is the removal of idiots and imbeciles, epileptics and dotards from the state hospitals, but the governor, we are glad to record, does not favor their transfer to county almshouses, and recommends a farm colony for these classes.

The whole message, in as far as it deals with the care of the insane, evinces a desire on the part of the governor to bring the standard of the West Virginia hospitals to a higher level and to establish a definite and intelligently supervised system of state care in which we sincerely trust the legislature will accord him liberal support.

PENNSYLVANIA AND HER DEPENDENT INSANE.—At the request and under the patronage of the National Committee of Mental Hygiene, Dr. C. Floyd Haviland of the Kings Park, N. Y., State Hospital has been engaged for some time in making a survey of the state and county institutions in which insane persons are confined in the State of Pennsylvania. We have not seen a copy of the report, but references to and extracts from it contained in *The Survey* of April 3, 1915., indicate that Dr. Haviland found in the majority of the county institutions just what might have been expected, just what has been found in such institutions ever since the fight was commenced, more than half a century ago, against county care for the insane. Indeed, it is interesting to

notice the striking resemblance between the descriptions of conditions observed by Dr. Haviland in Pennsylvania and those noted by other investigators in other states. Of the unfortunate inmates of Pennsylvania almshouses it is said, as it has been said in similar terms of those confined in like receptacles in other states: "Treated more like wild animals than unfortunate human beings . . . they constitute a class of individuals for whom no possible misfortune can have any terrors."

The present laws governing the care of the insane in Pennsylvania were passed largely at the instigation of a gentleman, who appeared to believe that the only and great danger which confronted the citizens of the state was that they were liable at any time to be summarily committed to an institution for the insane, and there held without warrant either in law or as regarded the need of care and treatment for mental derangement.

The laws were based, and the rules made to carry out their provisions appeared to be founded, more upon the fear that some one should be improperly sent to a hospital than upon an intelligent comprehension of the needs of the insane and the best measures to insure their prompt and efficient treatment.

Little was to be found in the laws or in the rules and regulations governing the commitment and detention of patients which tended toward inspiring confidence in hospitals and encouraging prompt recourse to hospital care, and much which awakened distrust and suspicion.

Unfortunately the Committee on Lunacy, a committee of the Board of Public Charities, instead of taking a decided stand for state care, and state care only, permitted itself to discuss the possibility of caring for some chronic cases in county institutions. In its earlier years it did much in removing the insane from the counties, and in its fifth report we learn that while on September 30, 1883, when it began its work, there were 1510 insane in the poorhouses, there were in 1887 but 898. In the seventh report this number had decreased to 616 and were distributed among eleven almshouses.

The seventh report of the committee reports a resolution of the Board of Public Charities adopted in December, 1888, directing the Committee on Lunacy to transfer to such almshouses as to it appeared suitable "incurable insane of a harmless character,"

and further says that the committee "has always encouraged the directors of the poor to keep at the almshouses the incurable harmless insane." No statement is made as to who was to decide either as to incurability or harmlessness. As a consequence apparently of the direction of the Board of Charities, the number of insane in almshouses had increased by September 30, 1890, to 698 and the number of almshouses detaining the insane to 16, exclusive of the Philadelphia almshouse, Blockley, where there were 887 patients in an institution which was and had been for years a disgrace to the city.

The Pennsylvania authorities were warned by Dr. Chapin and others of the "misery and wretchedness" which were the result of almshouse care, and told that with the best intentions county care of the insane soon sank to the level of the adjoining almshouses.

Much of the lunacy administration of the state has been conducted upon what may be termed a theory, just as the laws were enacted upon a theory; but the state is now confronted not by a theory, but by a condition, and by a condition which none of the theories of the past have been able to prevent. As long ago as 1893, in the tenth report of the committee, a paper by Dr. Chapin is published, urging the erection of small hospital buildings, in connection with the state hospitals, for acute cases and cases needing special care. In its conclusion he says of these buildings in which were to be concentrated all that modern hospital requirements demand—trained nurses, baths, means of isolation, and an adequate and trained medical staff: "If the suggestions which have been here briefly outlined were adopted, the results that would speedily follow would be the elevation of the asylums and so-called hospitals to a higher and proper medical standard; a reduction of the congested state of the wards; a specialization and individualization of acute cases, that would greatly encourage systematic medical study; in placing the hospitals for the insane more directly in line with other medical institutions of the country." Had Dr. Chapin's advice been followed Pennsylvania would have taken a position in advance of many of her sister states. The chronic and hopeless residuum would not have been pushed off to the almshouses, but shop and farm work would have employed their time and energy and

prevented further deterioration, and the conditions which Dr. Haviland describes so graphically would never have been brought about.

On September 30, 1890, there were in the Pennsylvania state hospitals 5171 patients; in county and municipal asylums, including Blockley, 1585. Dr. Haviland reports 12,236 patients now in the state hospitals and in 19 licensed and 11 unlicensed county institutions "performing the double function of almshouse and insane asylum" 4360 patients—if the term patients can be applied to individuals so cared for. The county institutions caring for the insane have increased from 17 in 1890 to 30 in 1915—of which 11 have no license to detain the insane, and the insane inmates of these institutions have increased 18 per cent faster than in the state hospitals.

Dr. Haviland reports mechanical restraint by iron handcuffs and chains, dungeon cells, misery, cold, improper and scanty diet, filth, and degradation almost beyond belief, if one did not know that these things were the inevitable consequences of county care. And yet in 1895 the state legislature passed a county care act agreeing to pay \$1.75 per week per patient to any county caring for its own insane. This act was surrounded by certain restrictions as to medical attention and other details of care, but these were materially modified by the succeeding legislature. Whatever the remaining restrictions may have been, there does not appear to have been any very well directed effort to see that they were carried out, unless, as is hardly probable, they were so crude as to permit the growth of conditions such as Dr. Haviland found.

There was at one time in the office of the Committee on Lunacy of Pennsylvania a display of various forms of restraint apparatus, mostly of a medieval type, which had been removed, we believe, from patients in county almshouses by order of the committee.

The revelations made by Dr. Haviland show that the time is ripe for radical action by the committee and that the restraint apparatus once removed, some constituted authority should see that it is not again put into use. Surely the great commonwealth of Pennsylvania, with its wealth and magnificent internal resources, will see the gravity of the situation and meet it as it deserves. A state care act should at once be enacted and money appropriated, not only to relieve the present over-crowded state



hospitals, but to erect additional hospitals for those now languishing in county almshouses.

During the siege of Paris in 1590 by Henri IV, Ambroise Paré, then in the last year of his life, seeing the people around him dying of famine and pestilence, made an appeal to the Archbishop of Lyons to bring about peace.

But slight paraphrase of his appeal will make it applicable to the people of Pennsylvania neglected and apparently forgotten by her lawmakers, now in her county almshouse asylums. He said: "Monseigneur, this poor people that you see here round you are dying of the cruel pains of famine and they ask pity of you. For God's sake, Monsieur, have pity on them as you want God to have pity on you; think a little of the high place to which God has called you, and how the cry of these poor men and women goes up to Heaven, and is a warning sent you by God, to remind you of the duties of your office, for which you have to answer to Him. Therefore, by that office and by the power which we all know you have, bring about peace for us and give us a way of living, for the poor can no longer help themselves." The archbishop, unaccustomed to such plain speaking, is said to have heard the great surgeon with patience, and to have replied next to nothing, but to have afterward said that this was not the sort of politics he was wont to hear talked, and that Master Paré had waked him up and made him think of many things.

The revelations made in the survey of the state and county institutions of Pennsylvania are not in the line of politics; but it is the bad politics of the state which is the cause of the conditions found. It is to be hoped that those in authority and who have the remedy in their power will be waked up and made to think of many things.

**SOUTH CAROLINA AND HER STATE HOSPITAL.**—The situation which confronts the state of South Carolina as regards the care of her insane is more serious in many respects than that in Pennsylvania. The latter state has several state hospitals, which, though badly over-crowded and in some instances handicapped by administrative regulations which seriously interfere with their proper management, can be made the nucleus of an efficient state care system.

In South Carolina, its one state hospital, through legislative and public indifference and neglect, has become a disgrace to the commonwealth, as is shown by the recent report made to the Governor by Dr. Arthur P. Herring, Secretary of the Maryland State Lunacy Commission. The recent state administration, controlled by a spirit of iconoclasm which it is difficult to understand, made matters still worse by removing Dr. Babcock, who has for years struggled against the most difficult situation, made increasingly worse by lack of financial assistance and an apparent impossibility of awakening any real civic interest in the unfortunate insane in the state. In 1909, however, Dr. Babcock and others aroused the legislative conscience to the point of securing a legislative committee of investigation. This committee made a report after a careful study of the conditions in its own state and the methods followed in communities with more advanced ideas. The report of this committee, after revealing conditions almost unbelievable, summarized its findings by saying that the institution was unfit to be used even as a place of detention. It recommended the sale of the present hospital site and the erection of a new hospital, and an increased amount spent on maintenance. These recommendations were published in the daily press and in the annual report of the hospital to the legislature, and the superintendent urged, as he had long and repeatedly done, that the appalling conditions be remedied.

Nothing was done. Party strife and the disgusting and disheartening scramble after political place and pelf stood in the way of any attention being paid to the demands of humane and decent care of the sick and afflicted.

When Hon. Richard I. Manning was inaugurated Governor of South Carolina in January, 1915, he at once took steps to determine just what the conditions were at the state hospital, and then to apply the remedy. Through the National Committee of Mental Hygiene, he secured the services of Dr. Herring, to whose report we have referred, but of which lack of space prevents extended notice. Suffice it to say that Dr. Herring found what was already known to exist, pointed out in detail the defects and deficiencies, the lack of care, the squalor and misery which was the lot of South Carolina's unfortunate insane, and then told the Governor and legislature what was needed to make the institution in fact as in name a hospital.

Governor Manning at once sought for a physician-in-chief and director, into whose hands he proposed to place practically untrammelled the responsibility of erecting out of the old institution a new and modern hospital, new and modern not only in construction and internal arrangements, but in method and work.

The legislature arranged for the appropriation of \$150,000 a year for five years for repairing and remodeling the old structures and building new ones, and provided for raising the standard of care by an increased expenditure for maintenance.

Just at the time when the hopes of the Governor and the other friends of the insane in South Carolina seemed about to be realized, a medical director of experience and zeal having been selected, it was discovered that the constitution of the state contained a provision making it impossible to appoint any one to the position who was not a citizen and voter in South Carolina, and as the physician chosen by Governor Manning was not a resident even of the state, he could not assume the duties of the office.

We do not know of any one in the state who has had training either in psychiatry or hospital administration with the exception of Dr. Babcock, the late superintendent, who so long carried on the work in Columbia amid most disheartening conditions, appealing without success for better financial support, reciting over and over the needs of the institution, to the apparently deaf ears of a legislature which in 1910 ignored the report of its own committee.

After being peremptorily removed from office by Governor Manning's predecessor, it is altogether improbable that Dr. Babcock could be again induced to undertake the work, even under the sympathetic support of the Governor and the awakened conscience of the legislature.

South Carolina and Pennsylvania have a great and important problem before them. They have each to learn what has recently been so tersely told by Dr. Thomas W. Salmon in the *Albany Medical Annals* for April, 1915, in an article upon "True and False Economy in the Care of the Insane," from which we make the following extracts because of their application to the conditions in both states:

We are constantly reminded of the great cost of caring for the insane. We know that New York spends more for this purpose than it does for

anything else except education. The appropriations for the care of the insane last year amounted to \$6,400,000, a sum exceeding the total amount appropriated for the executive and legislative departments all other state charities, the department of health, the militia, the courts, and the prisons and reformatories. The amount needed for this purpose is constantly increasing and it is certain that before many years it will reach \$10,000,000.

No one can deny the necessity of economy in the expenditure of every dollar of this enormous sum, but we should go still further and insist that the kind of economy which governs this great humanitarian enterprise should be that which considers the future as well as the present and which deals with the whole problem of mental diseases rather than with its institutional phases alone. It is the purpose of this paper to point out a few of the considerations which true economy must take into account.

Every insane person in this state is a source of expense or economic loss whether he is a patient in a state hospital or is living at home in the community. We are sometimes led to set up false standards of economy by overlooking this important fact. Perhaps some of the elements in the cost of not caring for the insane can be illustrated by a concrete example:

Mrs. F. is a "practical nurse" who used to earn from \$12.00 to \$15.00 a week in caring for confinement cases among persons of moderate means. Her husband had regular and well-paid employment running a hoisting engine for a construction company until he had his skull fractured by a piece of rock from a blast. Their combined earnings enabled them to maintain a good home and to keep their children in school. A long convalescence from this injury was followed by changes in Mr. F's mood and conduct. His habits of moderation in the use of alcohol gave place to intemperance, he became sullen, morose and taciturn, and finally he became controlled by delusions of infidelity regarding his wife. He suspected his daughter of immorality and practically all his conversation was devoted to these two topics. He continually threatened his wife and daughter and once he attacked the girl.

It became unsafe to leave Mr. F. at home alone and so his wife gave up nursing and secured employment as a cleaner in an office building where she worked from 6 until 9 every evening and from 5 until 8.30 in the morning for \$9.00 a week. She was thus able to be at home during the day and take care of her husband, her daughter relieving her when she came home at six in the evening from an office in which she was employed. The economic level of the family was greatly lowered and home life became unendurable. With a mistaken idea of duty which blinded her to her husband's real interests and made her quite unmindful of her obligations to her children, Mrs. F. refused to take steps for his commitment until it seemed likely that the neighbors would complain. Then he was committed to the Manhattan State Hospital.

The removal of Mr. F. from his family wholly transformed their home life. Mrs. F. has resumed her former occupation (thereby nearly doubling her earnings) and the daughter can seek recreation outside the house or invite her young friends to it.

The admission of Mr. F. added one more individual to the 34,701 patients for whom provision is made in the state hospitals for the insane and it added \$206.09 to the yearly cost of caring for them, but it is undeniable that the rehabilitation of this family resulted in a distinct net gain to society. This case illustrates only one element of the cost of mental diseases in the community. Other important sources of expense and economic loss are the anti-social acts committed by those whose minds are diseased. Although by far the worst consequences of insanity are the innumerable family tragedies for which mental diseases are responsible, insanity constitutes an important cause of crime and of less serious anti-social acts. . . .

It is absolutely necessary for us to count the cost of some of these consequences of insanity in the community if we are to determine what is true economy and what is false economy in the care of the insane. Unless we take these consequences into consideration it is impossible, for instance, to estimate the advantage of establishing out-patient departments for treatment of mental diseases in connection with the state hospitals. It is certain that these new facilities for the early treatment of mental diseases will result in the admission of more patients for, although curable cases will be brought to light and prevented from admission by effective treatment in the earlier stages of their disease, a greater number of incurable cases (like that of Mr. F.) will undoubtedly come to attention who require admission to state hospitals and who, but for this means of detection, would remain for years unnoticed or neglected in their homes. To offset the increase in the admission rate which is certain to follow the general establishment of out-patient departments, we have the large number of convalescent patients who can be discharged safely if they receive dispensary treatment subsequently but who, under other circumstances, would have to remain for indefinite periods in the hospitals. So, in order to determine whether or not it is economical for the state to undertake the dispensary treatment of mental disease it is necessary for us to see the state's relation to the *whole* problem of insanity—not merely to those phases of it which are dealt with inside the walls of the state hospitals.

It seems worth while, therefore, to examine some other features of the state care of the insane from this point of view, for it is only with these broader considerations in mind that we can be certain what is true economy and what is not.

I have tried to show, merely as an illustration, that it is true economy to establish out-patient departments in connection with the state hospitals. The whole question of the state's relation to phases of insanity which seem, at first glance, to be of importance only to the communities is beginning to receive serious consideration. It is impossible to do more than touch upon this question here, but I want to make the statement that there is no more promising field for true economy in the care of the insane than that of after-care. The "front doors" of the hospitals—those through which patients are admitted—are being opened more widely every day by such factors as better commitment laws, dispensaries for mental diseases and popular realization of the importance of securing the earliest possible

treatment for these diseases. The "back doors" of the hospitals—those through which patients are discharged to the community—can be opened more widely than they are by efficient and continuous after-care. The State Charities' Aid Association has shown the value and practicability of after-care for the insane and now it is time for the state to engage in it seriously and with the appropriation needed to insure success. Instead of extending this work, however, which is in the highest degree economical as well as humane, the last legislature nearly wiped out what had already been established in order to effect a reduction of less than \$5000 in an appropriation bill, and this was done in the interests of "economy."

The treatment of mental diseases is the greatest enterprise in which the state is engaged. It is an enterprise in which the state has a practical monopoly, for the number of insane persons treated in all private sanitariums in the state is only 1000. It is not only the greatest enterprise carried on directly by the state but it is the greatest *medical* enterprise carried on within the borders of the state for the number of beds in the state hospitals for the insane is larger than the total number in all other hospitals in the state. The responsibility for this undertaking is placed by law upon the State Hospital Commission, under whose immediate direction more than \$6,000,000 is spent every year. Surely, true economy would demand that expense should not be spared in providing the best scientific leadership in this enterprise, but, although no issues come before the State Hospital Commission in which the medical aspects are not the most important ones, there are but two physicians employed in that body. One is a member of the commission, who receives \$7500 a year, and the other is the medical inspector, who receives \$4500 a year. The duty is placed upon these two physicians of inspecting all public and private institutions for the insane and all institutions in which the alleged insane are kept. Upon them depends to a large extent the medical standards of the state service and the kind of treatment which 35,000 sick persons receive. They must exercise oversight over the sanitation of the fourteen communities of respectable size which the state hospitals constitute. They must personally examine the 6000 patients admitted each year in order to determine that all are rightly held for treatment. They conduct examinations for the promotion of physicians in the State Hospital Service and the Medical Commissioner is one of the three editors of the *State Hospitals Bulletin*, a scientific journal of high rank. They must have oversight over the extensive statistical researches carried on by the State Hospital Commission. All these things and many others must be done by these two physicians, without even the aid of an advisory board such as is provided for the State Department of Health.

Is it not absurd to economize by limiting the number of those able to furnish expert guidance for these great medical undertakings? The inspecting staff alone should consist of at least five persons. One should devote himself wholly to the examination of new cases admitted, one should be the chief of the Bureau of Deportations and Discharges, one should be the sanitarian of the commission and one should conduct all the inspections of



institutions, while another should devote his time to broad studies of the difficult problems which the care of the sick upon this enormous scale involves. The cost of such a plan for expert leadership in the state's principal undertaking would not be more than \$25,000 a year. The appropriation of \$25,000 for this purpose would be true economy in the strictest sense of the words, but, far from taking steps toward the adoption of such a plan, the legislature recently repealed the wise provision of the law which made the expert member the President of the State Hospital Commission and reduced the salary of the single Medical Inspector.

If the time at my disposal permitted it, I would like to discuss many other instances in which false economy has resulted from failure to recognize the fact that there are more aspects to the care of the insane than those apparent in the yearly estimates for the maintenance of state hospitals.

For many years the care of the insane in this state has been kept outside the field of practical politics, but during the three last administrations important positions have been filled chiefly with reference to what could be accomplished in building up or repairing several different state political machines and wholly without reference to the effect of such appointments upon the important and difficult work of this department. If there is any place in which the greedy hand of party politics has no place, it is in the care of the sick. The fresh trail of the politicians through the charitable activities of this state is like the path of an invading army and it is a shameful fact that parts of this trail were blazed by a commission which unblushingly bore the word "economy" upon its letterheads.

It is true economy for the state to foster scientific research into the causes of mental diseases, their treatment and the conditions which influence their prevalence, yet the splendid work of the State Psychiatric Institute, in which these problems are studied narrowly escaped being hopelessly crippled last winter on the plea of economy. . . .

These are a few activities in which true economy must be clearly differentiated from that kind which is measured by the aggregate amount appropriated by the state legislature for the care of the insane. There is no doubt that many members of the Finance Committee of the Senate and of the Ways and Means Committee of the Assembly, see beyond the totals in the appropriation bills before them, the pathetic army of the insane whose comfort and happiness and even often whose chances of recovery lie wholly in their hands. What benefits would follow if the vision of our lawmakers could be still further enlarged so that they could see the *whole* problem of mental diseases as it is woven into nearly all phases of our civic and social life! Then it would be apparent that it is only a counterfeit economy which cuts out of the appropriation bills all provisions for extending the care of the insane into the community and for embarking in the great work of prevention which lies before us.

Dr. Salmon has written of New York State conditions, but what he says applies with equal force to every state in the Union.

## Book Reviews.

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*Philadelphia General Hospital Reports.* Volume IX. 1913. Edited by AUGUSTUS A. ESHNER, M.D. (Philadelphia: Dunlap Printing Co., 1315-29 Cherry Street, 1914.)

This volume contains a number of brief papers which will be of interest to the surgeon, internist, pediatricist, neurologist, ophthalmologist, obstetrician and psychiatrist, as well as memorial notices of three chiefs who have died, Drs. Musser, Curtin, and Steinbach.

There is but one paper which is of especial interest to psychiatrists, namely, that entitled, "A Case of Dementia Præcox, with Autopsy," by Charles W. Burr. The chief lesson to be derived from this is that apparently most marked neurological symptoms may be present without demonstrable lesions in the nervous system. Other excellent papers are by Drs. Lloyd and Spiller, but the whole collection is of exceptional interest. Mechanically the book is very well done.

W. R. D.

*Index-Catalogue of the Library of the Surgeon-General's Office, United States Army.* Authors and subjects. Second Series. Vol. XIX. U. UZIELLI. (Washington: Government Printing Office, 1914.)

There is but little that we can add to what has been said in previous numbers of the JOURNAL concerning the value of this publication to the medical profession. The present volume will probably be more valuable to the gynæcologist than to the psychiatrist, as there are 291 pages of reference to *uterus*. But the many references to *urine* and *urinary* make the volume of value to all specialists. Printing and paper conform to the same high standard shown by previous volumes.

W. R. D.

*Fifteenth Annual Report of the State Board of Insanity of the Commonwealth of Massachusetts for the year ending November 30, 1913.* (Boston: Wright & Potter Printing Co., State Printers, 32 Derne Street, 1914.)

This volume is a little larger than any report heretofore issued by this Board, but conforms to the others in appearance and arrangement. We have previously commented on the excellence of the arrangement and the suppression of unnecessary detail, which does much to make the report readable. Like the last six reports, this contains a full record of the semi-annual conferences. At the one held May 20, 1913, Dr. Edward Cowles introduced a discussion on Training Schools for Nurses by a most interesting account of the history of their development in hospitals for the insane,

and was followed by Dr. Goss with a very practical paper. Others taking part were Miss Sara E. Parsons, of the Massachusetts General Hospital, Dr. Scribner, Dr. Flood, Dr. Frost, Dr. Tuttle, Dr. Fernald, Dr. Kline, and others.

The next conference was held November 18, 1913, and was upon Hospital Dietaries. It was opened by Dr. Otto Folin, Professor of Chemistry in Harvard University, and followed by a general discussion in which many participated. Both of these records are well worth reading.

W. R. D.

*Nervous and Mental Diseases.* By ARCHIBALD CHURCH, M. D., Professor of Nervous and Mental Diseases in Northwestern University Medical School, Chicago; and FREDERICK PETERSON, M. D., formerly Professor of Psychiatry, Columbia University. Eighth edition, revised. (*Philadelphia and London: W. B. Saunders Company, 1914.*)

The preface to this eighth "revised" edition is dated September, 1914, and one is led to infer, as is subsequently confirmed by reading the text that the section on nervous diseases alone has been subject to revision. In this section many additions of considerable note have been made as well as numerous minor alterations. The preface states that the whole subject of syphilis of the nervous system has been carefully scrutinized in order to bring the matter up to recent epoch-making discoveries. While spinal or lumbar puncture is mentioned, and the Wassermann reaction in blood and spinal fluid, no mention is made of the colloidal gold reaction as a means of differential diagnosis. The author speaks hopefully of salvarsan in the treatment of cerebro-spinal syphilis, and believes that the intra-dural injection by the method of Swift and Ellis gives hope at least of amelioration of symptoms.

As we have intimated before, in reviewing previous editions, the section by Dr. Church is a commendable contribution to literature. We regret that as much cannot be said concerning the section on mental diseases by Dr. Peterson. A comparison of the first with the eighth edition shows that the first seventy-eight pages are practically identical, the only change being the introduction of Kraepelin's classification. Surely something more has been done to advance or change our ideas upon the general etiology and symptomatology of mental disorders in fifteen years than is here indicated.

The chapter upon methods of examination has been rewritten since the first edition, but is apparently the same as in the seventh and the same is true of the chapter on general treatment.

As we had occasion to observe in a review of the previous edition, the section on mental diseases shows a strange inequality in the space devoted to various divisions; and the preponderance of space given to topics which are of less practical importance emphasizes the lack of space devoted to those concerning which the reader would naturally appear to require the greater amount of information. For example, less than twenty pages are given to manic-depressive insanity, eight and one-half to dementia præcox,

three and one-half to senile dementia and other senile psychoses, thirteen to paralytic dementia (paresis), while twenty-four are devoted to paranoia and fifty to idiocy.

Korsakoff's syndrome and mental disturbances as the result of arteriosclerosis are not given more than a line in the section on general symptomatology; indeed, arteriosclerosis does not receive even this attention. Nothing is said which would lead one to know that between the first and the eighth editions lumbar puncture had become a routine practice in diagnosis, particularly in paresis, and in the discussion on the etiology of paresis the author is no more definite than in former editions, notwithstanding the Wassermann reaction now in every-day use, which, by the way, he does not mention, the investigations of Moore and Noguchi, and the discovery of the spirochæte in the cortex of paralytics. Myxœdematous insanity finds no mention, nor does cretinism in the extended notice of other forms of idiocy.

After what has been said, it would probably be expecting too much to look for any reference to some recent and refined methods of differential diagnosis, like the colloidal gold reaction, or any discussion of the attempts by Fauser in Germany and Simon in this country and others to apply the Abderhalden method to the diagnosis of dementia præcox, or to the increasing interest in the etiological relations of disorders of the glands of internal secretion to insanity.

On the whole, the section on mental diseases is disappointing and unworthy the reputation of its author.

E. N. B.

## Half-Yearly Summary.

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ARKANSAS.—*State Hospital for Nervous Diseases, Little Rock.*—During August, 1914, 13 of the 34 deaths which occurred at this hospital were due to pellagra. A little later there were more than 75 cases in the hospital.

Dr. Greene, recently superintendent, has published a statement, according to the *Journal of the American Medical Association*, in which he states that the cause of his resignation was the enmity of the secretary of the State Charities Board, the reason for this enmity being that Dr. Greene refused to allow a tent to be installed on the hospital premises for the use of the brother-in-law of the secretary of the board, who is suffering from tuberculosis. Resolutions deploring the opposition of members of the Board of Charities, which resulted in Dr. Greene's resignation, were adopted by the Social Service Club of Pulaski County, and the United Charities of Pulaski County, November 25, 1914.

CALIFORNIA.—*Los Angeles County Psychopathic Hospital, Los Angeles.*—This hospital, recently erected upon the grounds of the County Hospital, has been opened as a psychiatric department of this institution. It can comfortably accommodate about 75 patients and has a complete equipment for hydrotherapy. It is intended to serve as a place of detention for persons suspected of being insane until their cases are investigated and a disposition made of them, to furnish treatment for acute cases likely to recover within a short time, to serve as a center for the dissemination of information with regard to insanity among the general public, and as a station for field work. It will also furnish to students, and to such physicians as so desire, an excellent opportunity for the clinical study of psychiatry, since the psychiatric material of Los Angeles is unsurpassed anywhere in the west.

The hospital is under the general direction of Superintendent Whitman, with Dr. C. L. Allen as psychiatrist in charge.

COLORADO.—*Woodcroft Hospital, Pueblo.*—Within the year new laboratories have been completed with a floor space of 20 x 50 feet and additional apparatus for serologic diagnosis and treatment installed.

An "open ward" with capacity of 15 beds, with solarium 14 x 40 feet attached, has been brought into use for elderly, quiet men, and a new garage, stabling three auto-cars, has been completed during the year.

FLORIDA.—A movement has been started towards the establishment of a colony for epileptics, and for this purpose a bill has been prepared to be

presented to the legislature authorizing the appointment of a commission to select a site, and appropriating \$50,000 for its purchase. It is intended to use the colony for feeble-minded as well as epileptics.

—*Florida Hospital for the Insane, Chattahoochee.*—Arrangements have been made for the erection of a building to be used especially for tuberculous patients.

ILLINOIS.—The warden of the State Penitentiary at Joliet has called Drs. G. A. Zeller, Eugene G. Cohn, and H. Douglas Singer, who are connected with the state hospital service, and Mr. George Ordahl, the state psychologist, to aid in formulating a plan for the segregation of prisoners according to their mentality.

The Illinois Society for Mental Hygiene has established headquarters at 5203 Blackstone Avenue, Chicago, where advice and help are to be given, and where various classes in occupation therapy are conducted under the charge of Mrs. Eleanor Clark Slagle, late of the Henry Phipps Psychiatric Clinic, Baltimore.

—*Elgin State Hospital, Elgin.*—The superintendent of this hospital has asked the State Board of Administration for a tuberculosis hospital to cost about \$50,000, a building for incurable women to cost about \$35,000, an extension to the dining-room, and an addition of about 500 acres to the hospital farm.

—*Alton State Hospital, Alton.*—Thirty-five patients have been transferred from the Anna State Hospital and are quartered in a farmhouse which has been remodeled for the purpose. They will do general labor work during the construction of the hospital buildings.

—*State Epileptic Colony, Dixon.*—Preliminary to excavating for the administration building and eight others, stakes were set February 13, 1915.

—*The Norbury Sanatorium, Jacksonville.*—There will be constructed an addition of 40 rooms. There will be two wings of 20 rooms each, extending at an obtuse angle from the present center building in order to insure a maximum amount of sunlight at all seasons of the year. The structure will be made up of four units of ten rooms each, with service room, diet kitchen, sun parlor, recreation room for each unit. Individual bath rooms will be a feature. The hydrotherapy department and men's recreation room, and gymnasium, will be in the basement. The kitchen, laundry, etc., will be in a detached building in the rear. Electrical storage system, electrical elevators and signals (noiseless) will also be a feature.

A drilled six-inch well of 129 feet in depth, reaching a gravel bed 25 feet in depth, with a capacity of over 1000 gallons of water an hour, was recently sunk and thus insures an ample supply of potable water.

INDIANA.—*The Northern Hospital for Insane, Longcliff, Logansport.*—Two congregate dining-rooms with kitchen are nearing completion, as are also four new loggias attached to the terminal buildings. These structures are all of brick, tile, concrete, and iron construction, are modern and fireproof. Each dining-room accommodates 400 patients.

A new modern dairy barn is also nearing completion and will soon be occupied. The fixtures include a mechanical milker, modern stanchions and feed and litter carrying apparatus.

KANSAS.—*Osawatimie State Hospital, Osawatimie.*—Owing to a lack of funds it has been impossible to institute advanced methods of treatment in this hospital, and the older methods of treatment have been applied with but little variation in their method of application. A method of classification is being formulated, however, and at the present time wards are being equipped for the segregation of acute cases where they may be under close observation for from three to six months after admission.

LOUISIANA.—*East Louisiana Hospital for the Insane, Jackson.*—During the past year \$254,000 was spent in maintenance and in providing new buildings and equipment. Five new buildings are in course of construction at present. During the past year 310 patients were admitted, and the per capita cost was 43 cents per day.

MASSACHUSETTS.—The State Board of Insanity began the publication of a Bulletin in September, 1914, which gives news of the various state hospitals, changes in the officers, etc. The new law requires more onerous duties of the trustees of state hospitals and as a consequence there have been quite a large number of resignations of such. The State Board has ruled that each private hospital having five or more committed patients shall have a physician on the premises constantly, and that private licensed hospitals having less than five patients, committed or not, shall have a resident physician who shall see each patient at least once daily, also that no private hospital shall keep mental patients on the third floor of any building without special permission in writing from the board. On January 6, 1915, the Governor and Council authorized the board to purchase certain tracts of land in Waltham, Belmont, and Lexington, containing 281 acres, on which it is proposed to erect a hospital for the mentally ill in the metropolitan district, as authorized by the legislature of 1914.

The Massachusetts Society for Mental Hygiene has opened an office at Room 313, Ford Building, 15 Ashburton Place, Boston, under the charge of an executive secretary.

MICHIGAN.—*Pontiac State Hospital, Pontiac.*—In February of this year a new building for infirm and bedridden men was placed in commission. This building accommodates 100 patients on two floors, each floor caring for 50 patients. Each floor is of entirely open dormitory and day-room space.



A new building with quarters for women night nurses was also occupied in February.

Of new construction provided for by the legislature and not completed, there remains for erection and equipment a cold storage plant, upon which work will commence at once.

Increased accommodations for the insane from this district of the state are looked for through the pushing forward to completion of the new colony for epileptics at Wahjameja, and the subsequent transfer of epileptics from this institution to the colony.

MISSISSIPPI.—*Mississippi State Insane Hospital, Jackson.*—This hospital is overcrowded and is caring for more than was provided for by the appropriation. The per capita allowance on which the appropriation was based was but \$140.

NEW JERSEY.—*New Jersey State Hospital at Trenton.*—Medical Work.—The principal feature of the medical work has been the continuation of the treatment of paresis by means of salvarsanized serum. The results would indicate that this treatment is beneficial only in the early stages. In the majority of cases committed to the hospital the process has been of such long duration that the cortex is irreparably destroyed. The treatment is effective in incipient cases, and in some of the mild types even after long duration.

The methods used have been the original Swift-Ellis method and Ogilvie modification. Treatments have been given alternately every week. The bichloride serum, the result of the work of Dr. Byrnes, is also being given a trial in selected cases. A number of cases have been treated by cerebral puncture, according to the method of Dr. Wardner of the Essex County Hospital, New Jersey, but the cases have been too few to form any definite opinion as to its advantage over the lumbar puncture method. The good results obtained in early cases warrant continuing this form of treatment. In cases of longer duration the process is very much modified. Instead of presenting the ordinary deterioration and physical decline in paresis of two or three years standing, these patients are in good physical condition, able to work about the wards, and would hardly be recognized as cases of paresis by a superficial examination. A number of cases of tabes have also been treated with pronounced success. Several cases of luetic meningitis have also been successfully treated by the Swift-Ellis method.

The conclusions deduced from the work in this hospital are, first, that patients must be recognized in the incipient stage and sent to the hospital early by the practising physicians. Second, that treatment must be modified so that it can be effectively given in two or three months instead of a year. The treatment that has been adopted is, one week the Swift-Ellis method and alternate weeks the Ogilvie modification, and possibly using as a supplemental treatment the bichloride serum used by Dr. Byrnes of Baltimore. It is possible that cerebral puncture, by reason of the fact

that the salvarsanized serum reaches the cortex in a more concentrated form than by the method of lumbar puncture, is more effective.

New Buildings, etc.—Plans for the psychopathic building for female patients, for which \$60,000 was appropriated, are completed. This building will be erected the coming summer.

The building will be three stories, with basement, and will be a modern fireproof construction. The basement floor will contain the physicians' offices, reception rooms, hydrotherapeutic outfit, and a large room for occupational work. The second and third floors will consist of five private rooms on each floor, with a dormitory at one end of the building and a day-room the same size at the other end. These dormitories are adjacent to large porches and are separated from the latter by folding doors, in order to obtain a maximum amount of fresh air treatment. The fourth floor consists of private rooms, and in one end of the building a complete operating department and provisions for post-operative cases.

The building for the criminal insane, for which \$100,000 was appropriated for one wing, is under construction and will be finished by May 1. The center building, containing administration offices, dining-room, kitchen, etc., for which \$50,000 was appropriated, is also under contract and will be finished before fall. A central power plant has been started and a part is now in operation, for which an appropriation of \$55,000 was made. In order to complete this central plant \$100,000 more has been asked for from the present legislature.

A home for male attendants has also been requested, the same to cost \$75,000. At present the financial condition of the state is of such a nature that it is doubtful if much money will be appropriated for improvements on new buildings to the state institutions this year.

At a meeting held at this hospital February 18, 1915, the Interstate Psychiatric Society was formed by representatives from New Jersey, Pennsylvania, Maryland, District of Columbia, and Virginia. During the morning an inspection of the hospital was made and after luncheon an organization meeting was held under the chairmanship of Dr. Henry A. Cotton. A committee was appointed to draw up a constitution, and Dr. Samuel T. Orton, Clinical Director and Pathologist at the Pennsylvania Hospital at Philadelphia, was elected secretary. Following this papers were read by Drs. Cotton, Paton, and Wardner. It is planned to hold meetings about January and July at the various hospitals in the above named states, devoting a day to an inspection of the hospital and the discussion of papers, similar to the plan followed by the Maryland Psychiatric Society. The call for the meeting was issued by Drs. S. T. Orton, H. A. Cotton, A. P. Herring, Wm. A. White, W. F. Drewry, Wm. H. Hancker, and W. R. Dunton, Jr.

NEW YORK.—The State Commission to Investigate Provision for Mental Defectives, announcement of which appointment was made in the last SUMMARY, has submitted its report, and in it especially urges that facilities

for vocational training of the mentally defective pupils in the public schools be improved and extended, and that there be a better supervision than at present exists over the mentally deficient pupils. Reformatory care or in hospitals for the insane is condemned. There are nearly 9000 mental defectives outside of New York City who are improperly cared for in their homes and in almshouses. A survey of New York City is being made. Dr. Max G. Schlapp has suggested a plan for a clearing house for the mental defectives which is under consideration.

On February 8, 1915, a special class for exceptional children was opened at the Speyer School, which is an experimental school of Teachers' College. It is under the direction of those members of the college staff who are especially concerned with educational psychology, elementary education, and physical education.

The legislative committee appointed two years ago to investigate the proposed taxation of Bloomingdale Hospital and other similar institutions has made its report, and finds that Bloomingdale is conducted as a business proposition, although some needy patients are treated free, and it is on account of this that the institution has been free from taxation. It is recommended that a commission be appointed to investigate the feasibility of taxing all such institutions.

The State Charities Aid Association has reported that under the present plan of paroling insane patients to their homes there has been a saving to the state of \$87,000 a year. Patients are returned to their homes, but are under the surveillance of psychiatrists. It has been found that in a number of instances the change was of benefit to the patient. The cost of maintenance under this system is \$200 per year.

Although the work of deporting the alien insane has been seriously interfered with by the war in Europe, there were 426 cases deported last year as compared with 486 during the preceding year.

New York City has been asked for an appropriation of \$39,000 for the inebriate farm which was purchased some time ago. A modern dormitory is being built and other buildings on the tract before its purchase are being remodeled. Accommodations for several hundred will be provided.

A conference and exhibit on mental hygiene was held in Albany on March 23, 24, and 25, under the auspices of the mental hygiene committee of the State Charities Aid Association.

The National Committee for Mental Hygiene held its seventh annual meeting February 15, 1915, at the Hotel Manhattan, New York City. Prof. Russell H. Chittenden of the finance committee announced that a gift of \$40,000 had been received from Mrs. Elizabeth Milbank Anderson, and one of \$44,500 from Mrs. William E. Vanderbilt. Both of these had been secured through the activity of the secretary, Mr. Clifford W. Beers. Mrs. Anderson had previously given \$10,000 toward the present year's budget. The Rockefeller Foundation has contributed for a period of years the services of Dr. Thomas W. Salmon, the Medical Director. The latter reported that surveys had been undertaken in a number of states which disclosed conditions similar to those existing 75 years ago and reported by

Dorothea Dix. Several thousand insane persons are still confined in almshouses. Seven state societies for mental hygiene are organized and 20 others are preparing for organization. The committee will before long begin the publication of a quarterly which will contain articles on mental hygiene, the prevention of insanity and the care and treatment of the insane, the feeble-minded, alcoholic and drug habitues. A bill has been introduced in Congress providing for the creation of a bureau of mental hygiene as a part of the United States Public Health Service. This has the approval of Surgeon-General Rupert Blue. Dr. Lewellys F. Barker was elected president for the ensuing year.

On March 8, 1915, Assemblyman Hinman and Senator Page, both of Albany, introduced a bill establishing a board of regulation of state institutions, to be composed of three members, one of whom must be a lawyer, receiving a salary of \$7000 each, and serving for a term of three years each. This board is to be given full fiscal control over all the state hospitals for the insane, 14 in all, and over all the state charitable and reformatory institutions, 21 in number. The board is to succeed to all the fiscal duties of the State Hospital Commission and to all the duties of the Fiscal Supervisor of State Charities. The State Charities Aid Association has issued a memorandum in opposition to this bill and also passed the following resolution March 17, 1915:

"WHEREAS, There has been introduced in the legislature a bill providing for the establishment of a board of regulation of state institutions, including the 14 state hospitals for the insane and the 21 state charitable institutions, and

"WHEREAS, A very searching inquiry as to the actual results of various forms of administration of state hospitals and state charitable institutions in several states made by a very competent investigator for this Association, confirmed the views which this Association has always held that both the efficient management of the institutions and their economical management are best secured by permitting a considerable degree of freedom to the local authorities of the various institutions, and

"WHEREAS, We would regard it as especially detrimental to the welfare of the state hospitals for the insane and as seriously jeopardizing the high standards already established by them if they were to be merged in one great department with all the other state charitable and reformatory institutions, and therefore

"Resolved, That it is the sense of the Board of Managers of the State Charities Aid Association that Assembly bill No. 1425, identical with Senate bill No. 1097, an act to establish a board of regulation of state institutions, is based upon fallacious assumptions, would effect no economies or improvements in the state hospitals and state charitable institutions, and would seriously jeopardize their professional standards and present humane and efficient management."

—*Binghamton State Hospital, Binghamton.*—The most notable improvement at the hospital during the past six months has been the completion

of the new electric lighting system. This system consists of a new power plant with dynamos of the alternating type, with cables to the various hospital buildings, and an out-door lighting service of about 60 boulevard lights, each of 250-candle power. The power plant is located in a building adjoining the boiler house, the arrangement of which is believed will be much more economical than the old system with the engines and dynamos nearly a mile distant from the boilers generating steam. The new system with its high tension current and transformers at the various buildings provides more uniform light throughout the institution than was possible when the direct current was used and the cables were everywhere loaded beyond their capacity.

Contracts have just been made for an addition to the boiler house at the power plant and the installation of a new 500-horse power Stirling boiler, and the erection of a new stack 150 feet high, in connection therewith. The addition to the boiler house will be large enough to accommodate three additional boilers, which will care for the requirements of the hospital for practically all time to come. Contracts have also been awarded for the general construction, electric lighting, heating and plumbing of the new building for women of the chronic class, which will accommodate 300 patients and about 35 employees when finished. This building will be located northwest of the large building for men of the chronic class, known as Broadmoor, and will be connected with the Broadmoor kitchen by means of a corridor, this kitchen being ample in size for all cooking service that will be required by both buildings.

New tile floors have been laid in toilet sections in the tuberculosis pavilion Edgewood and in Ward 21 of the main building. These improvements have long been needed, and add greatly to the appearance and utility of these toilet sections. Other repairs and improvements of more or less importance have been made throughout the hospital.

In October, 1914, an instructor in physical culture was secured, and since her arrival, October 1, she has given daily instruction in the assembly hall to classes of patients, with gratifying results. Some of these classes have been drawn from wards where the patients could scarcely be induced to move about at all, but after a few weeks of systematic effort on the part of the teacher these pupils have shown interest in their work and developed remarkable facility in executing complicated movements.

—*Buffalo State Hospital, Buffalo.*—This hospital sent to the Panama-Pacific Exposition at San Francisco an exhibit of hospital work. This exhibit included all the hospitals and was planned by the State Hospital Commission of New York State, and put under the direction of Dr. H. M. Pollock, the statistician. The exhibit consisted of samples of work made in the wards and shops, such as basket work, raffia work, sewing, samples of uniforms, dresses, etc., and in miniature sizes, tinware, shoes, and clothing.

The new bakery has been completed and put in operation, proving very efficient and satisfactory.

The contract has been let for a water-softening apparatus for treating the water supplied the institution from Lake Erie, so that it will be more suitable for use in the boilers and in the laundry. It is believed, from the experience of other institutions, that this will prove an economy.

The managers have taken action looking to the possible acquisition by rental the coming season of another farm for convalescent patients on or near the shore of Lake Ontario, or other body of water, similar to the one which was operated at Wilson for several years, and which was of great advantage and benefit to the patients, and which was lost through sale.

—*Dannemora State Hospital, Dannemora.*—A superintendent's residence has been completed and is now occupied, and a new wing with a capacity for 100 patients is approaching completion. The interior finishing and the installation of the heating, lighting and plumbing of this wing are now in progress. All the buildings at this hospital are constructed of granite quarried from the mountain on the slope of which the institution stands, and the work is done by the hospital organization, without contracts. The quarrying of the stone is also accomplished by institution employees, assisted by patients.

A well-equipped laboratory has recently been opened, which affords all necessary facilities for the making of Wassermann tests and autogenous vaccines, as well as being available for the usual pathological work of the hospital.

—*Hudson River State Hospital Poughkeepsie.*—Wards 46 and 47, the addition to the Edgewood Group, were opened for patients since the last SUMMARY. These wards accommodate 50 disturbed patients and afford the greatly needed accommodation for patients of that class. The additional space enabled the hospital to receive 100 patients on transfer from Central Islip State Hospital, Central Islip, N. Y.

Rearrangement of the plumbing facilities in the nurses' house at Central Group is now in progress. Much of the plumbing was old, unsanitary, and greatly in need of replacement. This will put the sanitary arrangements in a shape quite satisfactory.

Kitchens and pantries have been painted in several buildings, and Cottage One has been quite thoroughly renovated.

The clinic held in the city of Poughkeepsie continues to attract patients, and it seems to be a need of the community not evident prior to the organization of the clinic.

—*Manhattan State Hospital, Wards Island.*—Not much has been done in the line of new buildings or other important work.

The new nurses' home has been practically completed during this time, and it is expected that it will be finally turned over to the hospital within the next four weeks.

The fire alarm system has been completed and is now ready for final inspection.

The hot water lines of the Verplanck, East Building, and Wards 13 and 17 have been entirely renewed.

—*Rochester State Hospital, Rochester.*—A new nurses' home was occupied in October last.

—*Utica State Hospital, Utica.*—Special attention has been given to the matter of paroles during the past six months. At times the number of parole patients has reached 116, while the average number on parole has been nearly 100 in a population of 1600. It has been the policy of the hospital to make searching investigation of the home conditions of the patient before allowing him to leave the hospital, and of late, in most cases, discharge has been granted only at the expiration of the maximum parole period. Many of the parole patients have been kept under the personal observation of the staff, reporting monthly or oftener at the hospital in person, or where this was not possible, reports in writing have been received either from the patient himself or from some interested relative or the family physician. In cases where the patient failed to report, he was in most instances visited by one of the transportation nurses. In this way, it has been possible to keep in fairly close touch with the majority of those who are on parole from the institution, and while this arrangement is by no means ideal, it has so far worked out in a fairly satisfactory manner.

—*Willard State Hospital, Willard.*—In the Training School for Nurses, class of 1914, there were 12 graduates, 3 men and 9 women. The senior class of 1915 has 18 pupils and the junior class 19 members. There are 89 graduates of the training school in the service of the hospital at present—36 men and 53 women. Seventeen of these nurses are registered with the State Board of Regents.

Special efforts for the re-education of the insane, particularly young dementia præcox cases, are made in the school for patients, where cases selected by the physicians receive training under the direction of a teacher and assistants.

The annual meeting of the committee on mental hygiene and after care of this hospital district was held at Willard October 2, 1914. The reports of the various members present indicated that they had given much personal attention and study to the welfare of the patients paroled at home, or discharged to the care of relatives.

A transfer of 41 men and 30 women patients was received from Manhattan State Hospital December 4, 1914.

Seven cases of typhoid fever developed in patients at the Hermitage, the infirmary for men, during October and November. There were six cases of diphtheria in the hospital during the winter, and several cases of



erysipelas. During the month of March many patients and employees have been subject to influenza.

Fifty-three women patients, workers in the sewing room, laundry and elsewhere, accompanied by a physician and nurses, enjoyed an excursion to Watkins, N. Y., on the steamer "Nautilus" and a trip through Watkins Glen, October 10.

The hospital steamboat "Nautilus," disabled by the breaking of the rudder chain, ran aground during a storm December 29, 1914. The boat, which fortunately was not badly damaged, was rescued and towed to the harbor by a tugboat and crew from Watkins, N. Y., the following morning.

The commission approved an estimate for a 45-horse power tractor of the caterpillar type, manufactured by the Holt Manufacturing Company of California, for plowing and other farm work, and it is expected that this, together with plows, four in number, will be delivered by the middle of April.

New serving rooms have been constructed at the group of buildings known as "Sunnycroft" in connection with the kitchen and dining-rooms.

**NORTH CAROLINA.**—*State Hospital at Goldsboro.*—During the past year the completion of a new laundry and addition to two of the colony buildings has increased the capacity of the institution 174 beds.

The recent legislature gave slightly increased appropriations for maintenance and \$4455 for increased fire protection and new laundry machinery.

Isolation wards have been arranged for pellagra cases, of which there is a constantly increasing number. As a cause of death this disease ranks second during the biennial period.

The position of clinical director has been created.

Laboratory facilities for pathological work have been added with a view to taking greater advantage of the wealth of material.

**OHIO.**—*Ohio State Hospital for Criminal Insane, Lima.*—This hospital, which was erected at a cost of \$2,000,000, was formally opened February 15, 1915. It is expected that 600 patients will be received during the four months following its opening.

—*Columbus State Hospital, Columbus.*—During the past year there has been completed at this hospital a new bake shop, which is considered the finest in the state. The former recreation hall has been remodeled into a store room, which is equal, if not superior, to that of any other store room connected with the state hospitals in Ohio.

The building formerly occupied by the store room has been renovated and been remodeled to a certain extent, and is now occupied as a recreation hall, in which there are bowling, billiards, pool, checkers, chess and other amusements for the patients of the hospital.

**OKLAHOMA.**—*Oklahoma State Hospital, Norman.*—Heretofore this institution has been run as a private institution, caring for the larger part of the

state's insane. The legislature which has just adjourned saw fit, under the wise leadership of Governor Robert L. Williams, to purchase the institution, which will be taken over by the state on July first of this year, after which time it will be under state management, the superintendent continuing in charge. After July 1 the state will have three regularly organized institutions for the care of its insane, this one to remain as the Oklahoma State Hospital.

PENNSYLVANIA.—A bill has been drafted by the Board of Public Charities providing for the appointment of a commission to select and buy sites for two new state hospitals for the insane, one at the eastern and the other at the western end of the state. It is planned to have each of them accommodate about 1500 patients.

—*State Homeopathic Hospital for the Insane, Rittersville.*—Plans have been adopted by the Board of Trustees for the erection of a reception building, two buildings for tuberculous patients, a nurses' home, and an isolation cottage.

—*Philadelphia Hospital for the Insane, Philadelphia.*—The physical improvements at the Philadelphia Hospital for the Insane, with its branch at Byberry, were as follows:

BYBERRY.—The colonization at Byberry City Farms, which includes the establishing of colony units, three in number, with a capacity of 20, 25, and 100, respectively; the erection of buildings for male and female tuberculosis cases; a small farm building converted into an industrial building in order that patients be given employment, aside from landscaping, agriculturing, etc., etc., in broom, basket, and brush making.

THIRTY-FOURTH AND PINE.—A new sanitary flooring of cement with terrazzo passageways and tile borders was laid in the congregating dining-rooms; tables were retopped and varnished, thus abolishing oil cloth; work on sanitary improvements of all toilets is about completed; new floors are to be laid in a few of the wards; the mattress shop is to be extended, thus giving additional space in industrial units; a central linen room has solved a great many laundry problems; fly tents were erected for summer use, as well as for tubercular bedridden cases; improvement of the landscape and free use of paint throughout the buildings; a few bedside partitions were installed in the large refractory receiving ward, thus securing roughly semi-quiet rooms.

MEDICAL ADMINISTRATION.—Under this heading there has been an increase of physicians; medical records are complete and mental notes of deaths and discharges are to be bound in volume form according to the psychoses; the number and wages of attendants, as well as their hours off duty, has been increased; therapy, especially cold packs, hot packs, enterocolysis, etc., has been freely used with gratifying results; chemical restraint has been abolished, but it is impossible to completely eliminate mechanical restraint

on account of overcrowding and gross physical defects of the buildings; bandaging eyes in excited bed cases, as well as during the continuous baths, has met with gratifying results; initial purgatives at the time patients are placed in the tub has also been very effectual in producing a rapid relaxation; intermittent, frequent baths have been more effectual than a long, continuous bath.

RECREATION AND EMPLOYMENT.—The work of the various shops and class rooms has been extended; entertainments, balls, picnics, etc., have been largely attended; special instructors of calisthenics have been employed and are producing excellent results, especially the outdoor army drills and exercises; the "Knights of Sunshine," a squad in the male department, are making wonderful progress; the "Ladies of Sunshine," however, will soon be close seconds (this nomenclature of the squads is subject to change); gymnastic equipments are being installed, attendants are receiving a special course of instruction. The training school is expected to be chartered this fall.

Special medical work, other than the routine, has been confined to laboratory studies of the præcox and manic-depressive groups, in conjunction with therapeutic experiments in the administration of glandular extracts, etc. An effort is being made to secure special workers in the study of metabolism to determine, if possible, the nature of the "lipoids" which are responsible for such a high percentage of positive Wassermanns, in which syphilis cannot be accepted as the cause.

—*State Hospital for the Insane, Norristown.*—The hydrotherapeutic building has been running a year March 2, 1915, and during this time 5658 treatments were given to patients of the men's department of this institution.

—*Friends' Asylum for the Insane, Frankford, Philadelphia.*—In deference to advanced public sentiment and in accordance with modern medical views, the Board of Managers of Friends' Asylum, by permission and order of court, have had the charter of the institution amended with change of its name.

Hereafter the institution will be operated under the title of "Friends' Hospital."

SOUTH CAROLINA.—Dr. Arthur P. Herring, secretary to the Maryland State Lunacy Commission and a member of the National Committee for Mental Hygiene, has made a survey of conditions in relation to the care of the insane in this state at the request of Governor Manning and has submitted his report, which contains the following recommendations in regard to the State Hospital for the Insane at Columbia: First, the superintendent shall be appointed by the Board of Regents and not by the Governor, and shall be removed only for cause and with a hearing. Second, the Board of Regents shall consist of five members appointed by the Governor and confirmed by the senate, who shall be appointed for a term of six years and

not removed except for cause and with a hearing. Third, the superintendent shall make all appointments and have power of administration subject to approval of the Board of Regents. Fourth, all regulations of the hospital shall be formulated by the Board of Regents and executed by the superintendent and his assistants. Fifth, the name shall be changed from the State Hospital for the Insane to the Columbia State Hospital, and the colony for negroes be known as the State Park Colony. Sixth, to provide for voluntary admission. Seventh, that there shall be a fiscal agent who shall see that relatives of patients responsible for their support shall reimburse the state. Eighth, no female patient shall be admitted unless accompanied by a relative, nurse, or friend of the same sex. Ninth, that a system of after care be provided for patients who are able to leave the hospital but are not fully recovered. Tenth, to provide for the admittance, care, and treatment of inebriates. These recommendations were approved by the Medical Society of South Carolina at a special meeting held February 8, 1915. It is said that the condition of the buildings, especially on the men's department, is quite deplorable and very unhygienic.

**SOUTH DAKOTA.**—*Asylum for Insane Indians, Canton.*—The hospital building has been completed and gives an increased capacity of 40 patients.

**VIRGINIA.**—The superintendents and assistant physicians of the Virginia State Hospitals for the Insane and the Colony for Epileptics met in January, at the Eastern State Hospital at Williamsburg, in an inter-hospital medical conference. Dr. J. S. DeJarnette of the Western State Hospital, Staunton, was elected chairman, and Dr. A. S. Priddy of the Colony for Epileptics, Madison Heights, as secretary for one year.

Dr. William F. Drewry, superintendent of the Central State Hospital Petersburg, Va., read a paper on Social Service Among the Insane, and its Relation to the Prevention of Insanity. Dr. Hankins, assistant physician at the Eastern State Hospital, read a paper on the Alcoholic Psychoses. There was exhibited a number of cases. Steps were taken looking to the organization of a State Society for Mental Hygiene. The next conference will be held at the Central State Hospital at Petersburg, in July.

—*Central State Hospital, Petersburg.*—A two-story brick building, which has been in course of construction since last summer, will soon be ready for the accommodation of about 150 women suffering from chronic mental diseases. In one part of the basement there will be a section for shower baths, dressing rooms, etc., and in another there will be a diet kitchen and dining-room. There are large open porches on the south and southwest sides of the building. The site of the building is about 100 yards from the main hospital group, and is very well located for chronic cases. A large garden, etc., will afford outdoor employment for the patients.

Construction will soon be begun on an improved water supply plant, costing about \$13,000. The water will be taken from the Appomattox

River, treated in a modern filtration plant, and then conveyed to the large water tanks at the hospital for distribution through the buildings. This addition to the water supply system will be sufficient for the needs of the hospital for all time to come.

WASHINGTON.—*Western Hospital for Insane, Fort Steilacoom.*—Many changes are being made at the institution, as well as improvements, among which is a new hydrotherapy department for the women. Very gratifying results have been obtained in the hydrotherapy department for the men, which has led to this step.

Wassermann reaction, urinalysis, and blood pressure are being taken on all patients. Intraspinal injections of salvarsanized serum have been tried in cases suffering from paresis and cerebral syphilis. Thus far, the results appear to be rather encouraging.

WEST VIRGINIA.—At the request of Governor Hatfield, Dr. Carlos MacDonald made a survey of the state hospitals and certain recommendations for their improvement. Conditions were found to be quite deplorable and in a number of cases there is little possibility of more than a slight improvement owing to the bad situation of the hospital. The lack of available land for farming or other outdoor work is most surprising, and there is no opportunity to acquire such in the vicinity. Dr. MacDonald recommends that farm colonies be started as near to the hospitals as is possible and that many steps be taken to improve the conditions in the present buildings. Undoubtedly the most important recommendation is that the hospitals be removed from political control.

Owing to the lack of finances due to the loss of income from the liquor tax West Virginia has been obliged to declare a moratorium, and the problem of sustenance for the insane is said to be a serious one.

During recent session of the state legislature the following changes were made in the insanity law:

Names of hospitals have been changed to—

Spencer State Hospital, Spencer, W. Va.

Huntington State Hospital, Huntington, W. Va.

Weston State Hospital, Weston, W. Va.

The control and management of the state institutions placed under a state board of control.

Commitment by justice of peace has been abandoned and a commission of lunacy formed in each county, consisting of the president of the county court, county clerk, prosecuting attorney, and two physicians.

The new law permits voluntary commitment and parole of patients.

It is unlawful to confine any insane person in jail, except in cases of extreme violence.

The enclosed premises and lands belonging to the state hospitals are declared private grounds. Many other changes bring the laws up-to-date.

—*Spencer State Hospital, Spencer.*—During the past six months there were transferred to this hospital from other state institutions 77 male patients, bringing the total population up to 635. A brooder house which will accommodate 3000 chicks at one time has been constructed. A concrete roadway from the hospital to the county road has been completed. A first-class shop for all kinds of wood-working machinery has been built. Three thousand feet of 8-inch drain tile has been placed on the farm. The exterior of the buildings has been painted. Six large sun rooms are under construction. The laboratory has been enlarged and additional equipment has been added to the operating room. Many minor repairs and improvements have been made to the institution. Recently 40 acres of land was leased for truck purposes, which in conjunction with the farm will aid in producing vegetables for the institution.

WISCONSIN.—*Milwaukee Hospital for Insane, Wauwatosa.*—A new dairy barn, 40 feet wide and 200 feet in length, was recently completed. This barn accommodates 80 head of milch cows, two bulls, and sufficient stalls for calves. There is also a sleeping room for the herdsman, wash room, clothes room, and a room for utensils. This building is constructed of cement blocks made here, having a 2-inch air space. The roof is covered with asbestos. The floor is of concrete with cork brick for the cows to stand on. The interior, both ceiling and side walls, is painted in white enamel, and the ventilating system is of the most modern and up-to-date type. The barn is equipped with drinking bowls, food carriers, manure carriers, etc., and is one of the finest and most modern in the state. A four-unit Sharpless milking machine outfit has been installed, which is giving perfectly satisfactory results and which is certainly more sanitary than milking by hand.

A new bakery building has also been erected. This building, like the new barn, was built of concrete blocks made here, up to the first story, and of reinforced concrete above. The flat deck of the roof is of gravel and the sloping part is covered with imitation tile. This building provides for a barber shop, two tailor shops, and storage for coke in the basement. The first story contains the bakery and flour storage room and is finished in white tile. It has been equipped with a new bake oven with white enamel front, and a new flour-sifting machine has been installed. The second story provides for six good sized bed rooms and a bath room, and is for the use of outside employees.

A very considerable amount of work along modern scientific lines has been accomplished during the past year by the medical staff, chief among which was the performance of lumbar puncture and examination of the spinal fluid. This operation, lumbar puncture, was performed only in cases where there was some doubt as to the diagnosis, and in order to establish one. An appropriation has been secured in the last budget for the establishment of a fully equipped clinical, pathological and research laboratory where this work can be accomplished on a larger scale.

CANADA.—*Ontario Hospital for the Insane, Brockville.*—The new Psychiatric Hospital in connection with this hospital is now completed and will be ready for occupancy very shortly. It provides accommodation for 60 patients of the more acute and curable type.

It is fully equipped with continuous baths and other hydrotherapeutic apparatus, also commodious verandas surround three sides of the building, and every provision is made for open air treatment during the whole year.

—*Hospital for the Insane, Hamilton.*—In caring for insane criminals a step in advance has been made by the Federal Government of Canada in that arrangements have been completed with the Ontario Government for the transference of insane criminals now confined in the Dominion Penitentiary at Kingston, Ontario, to the new Ontario Reformatory at Guelph, where a section has been set aside for their reception and carried on under the able leadership of the Provincial Secretary, Hon. W. J. Hanna. The intention is, at a later date, to erect a complete building for this class of prisoners, and have them congregated here from the several Provinces of the Dominion.

SASKATCHEWAN.—*Hospital for the Insane, Battleford.*—Plans have been prepared for the construction of three additional units to this hospital for the accommodation of male patients, as there has been a rapid increase in the number of their admissions.



## Appointments, Resignations, Etc.

- ALLEN, DR. CHARLES LESLIE, appointed Psychiatrist to the Los Angeles County Psychopathic Hospital at Los Angeles, Cal.
- ANDERSON, DR. J. G., appointed Trustee of State Hospital at Goldsboro, N. C.
- ANSTEAD, MISS IDA J., appointed Principal of Training School for Nurses at St. Lawrence State Hospital at Ogdensburg, N. Y., March 1, 1915.
- BABENDREIER, DR. GEORGE MYLIUS, formerly Assistant Physician at Washington Asylum Hospital at Washington, D. C., died at Alpena, W. Va., March 7, 1915, from tuberculosis, aged 27.
- BEALL, DR. JOHN R., appointed Medical Interne at Manhattan State Hospital at Wards Island, N. Y., January 1, 1915.
- BRACKETT, SEWALL C., appointed Trustee of Westborough State Hospital at Westborough, Mass.
- BROWN, DR. FRED W. A., formerly Assistant Physician at Northern Hospital for the Insane at Winnebago, Wis., recently a specialist in skin diseases, was found dead in his office in Oshkosh, Wis., February 20, 1915, from angina pectoris, aged 52.
- BURGESS, DR. T. J. W., Superintendent of Protestant Hospital for the Insane at Montreal, has recently been ill, but is convalescing.
- BUSSE, DR. EDWARD P., Superintendent of Southeastern Hospital for the Insane at Madison, Ind., resigned.
- CALHOUN, DR. ARTHUR P., Superintendent of Western Washington State Hospital for the Insane at Fort Steilacoom, resigned.
- CALLAHAN, MISS JOSEPHINE A., Principal of the Training School for Nurses at St. Lawrence State Hospital at Ogdensburg, N. Y., resigned December 1, 1914.
- CAMERON, JOSEPH, Manager at Willard State Hospital at Willard, N. Y., died December 17, 1914.
- CARRIEL, DR. HENRY B., for fifteen years Superintendent of Jacksonville State Hospital at Jacksonville, Ill., resigned.
- CHANCELLOR, DR. CHARLES WILLIAM, President of the Maryland State Lunacy Commission in 1880, died at his home in Washington, D. C., January 3, 1915, aged 84.
- CLARK, DR. CHARLES H., Superintendent of Cleveland State Hospital at Cleveland, Ohio, appointed Superintendent of Lima State Hospital for Criminal Insane at Lima, Ohio.
- COCKE, DR. EDWIN W., appointed Assistant Physician at Western State Hospital at Bolivar, Tenn.
- COFFIN, DR. JOHN L., Chairman of Trustees of Westborough State Hospital at Westborough, Mass., resigned.
- CONZELMAN, DR. FRED. J., Medical Interne at Manhattan State Hospital at Wards Island, N. Y., resigned February 16, 1915.
- COOLEY, DR. E. E., Medical Interne at St. Lawrence State Hospital at Ogdensburg, N. Y., resigned January 31, 1915.
- COOLEY, DR. RAYMOND L., appointed Medical Interne at St. Lawrence State Hospital at Ogdensburg, N. Y., February 15, 1915.
- CROSS, DR. ALBERT E., appointed Consulting Oculist at Westborough State Hospital at Westborough, Mass.
- DELAHANTY, DR. WILLIAM J., appointed Trustee of Worcester State Hospital at Worcester, Mass.
- DERCUM, DR. FRANCIS X., appointed Consulting Physician to State Hospital for the Criminal Insane at Fairview, Pa.

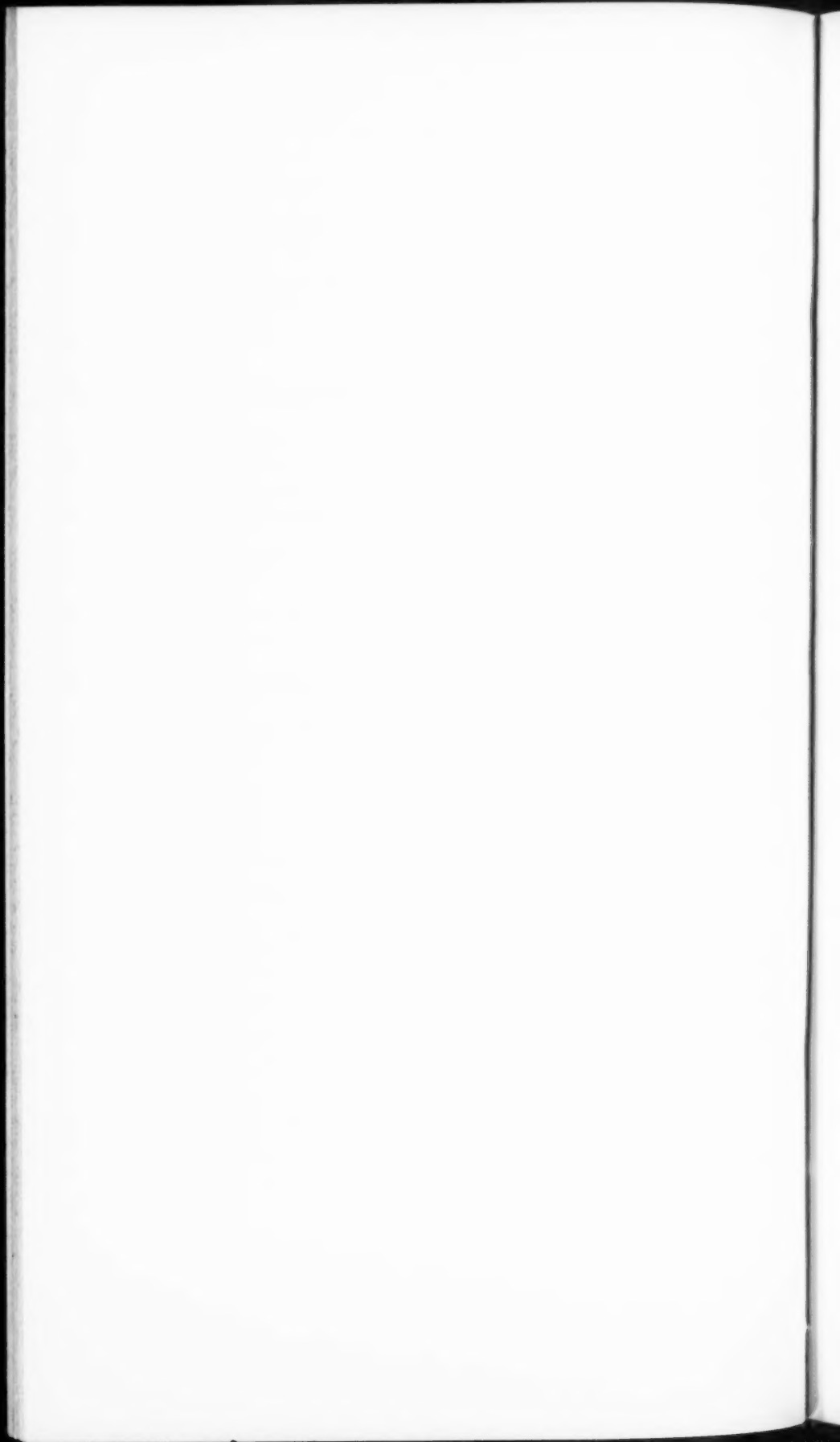
- DEVENDORF, DR. FREDERICK C., Medical Interne at Manhattan State Hospital at Wards Island, N. Y., resigned December 2, 1914.
- DEWSON, GEORGE B., Trustee of Westborough State Hospital at Westborough, Mass., resigned.
- DEXTER, DR. ROGER, Senior Assistant Physician at Dannemora State Hospital at Dannemora, N. Y., has recently completed a two months' course under Dr. August Hoch at the Psychiatric Institute at Wards Island, N. Y.
- DONAHUE, MRS. MARY E., appointed Trustee of Monson State Hospital at Palmer, Mass.
- DONOHUE, DR. GEORGE, Superintendent of State Inebriates Hospital at Knoxville, Iowa, appointed Superintendent of Cherokee State Hospital at Cherokee, Iowa.
- DURFEE, MISS ELIZA C., Trustee of Westborough State Hospital at Westborough, Mass., resigned.
- DURGIN, DR. DELMER D., reinstated as Assistant Physician at Kings Park State Hospital at Kings Park, N. Y., September 27, 1914.
- DWELLE, MR. EMMETT C., President of the Board of Managers of Willard State Hospital at Willard, N. Y., died January 28, 1915.
- EDMONDS, DR. MEADE C., appointed Medical Interne at Manhattan State Hospital at Wards Island, N. Y., February 17, 1915.
- EGGINTON, DR. LEO O., formerly Pathologist at Independence State Hospital, Independence, Iowa, died at his home in Juneau, Alaska, October 21, 1914, from appendicitis, aged 32.
- EICHELBERGER, DR. W. W., Assistant Physician at City Detention Hospital at Baltimore, Md., appointed First Assistant Physician at Southern Indiana Hospital for the Insane at Evansville.
- EPLER, DR. CRUM, appointed Roentgenologist at Woodcroft Hospital at Pueblo, Col.
- ERNEST, DR. JOHN R., Medical Interne at Government Hospital for the Insane at Washington, D. C., promoted to be Junior Assistant Physician January 1, 1915.
- FISHER, DR. THEODORE WILLIS, formerly Superintendent of Boston State Hospital at South Boston, Mass., died at his home in Belmont, Mass., October 10, 1914.
- FRANCISCO, DR. H. M., appointed Pathologist at Central Hospital for the Insane at Nashville, Tenn., September 19, 1914.
- FRETZ, DR. CLAYTON D., appointed Trustee of State Hospital for the Insane at Norristown, Pa.
- GARISS, DR. JOSEPH L., appointed Medical Interne at Government Hospital for the Insane at Washington, D. C., October 16, 1914, and promoted to be Junior Assistant Physician January 1, 1915.
- GLENN, DR. LUCIUS N., appointed Trustee of State Hospital at Morgantown, N. C.
- GOLDHAMMER, DR. SAMUEL, appointed Clinical Assistant at St. Lawrence State Hospital at Ogdensburg, N. Y., January 6, 1915.
- GOLDSTEIN, DR. A. T., appointed Medical Interne at Utica State Hospital at Utica, N. Y., January 1, 1915.
- GORDON, DONALD, appointed Trustee of Worcester State Hospital at Worcester, Mass.
- GOSLINE, DR. H. J., appointed Assistant Physician at Danvers State Hospital at Danvers, Mass.
- GRANBERY, DR. ROY, appointed Assistant Physician at Western State Hospital at Bolivar, Tenn.
- GREENE, DR. JAMES L., Superintendent of State Hospital for Nervous Diseases at Little Rock, Ark., resigned.
- GROLL, DR. EDWARD W., for three years Assistant Physician at Binghamton State Hospital at Binghamton, N. Y., resigned April 1, 1915.
- GUERNSEY, DR. P. F., Pathologist at Central Hospital for the Insane at Nashville, Tenn., resigned November 28, 1913.
- HAMMOND, DR. FREDERICK S., Pathologist at New Jersey State Hospital at Trenton, who has been seriously ill with meningitis, is steadily improving and will probably be able to return to work in a few months.
- HARRINGTON, CARRIE B., Trustee of Worcester State Hospital at Worcester, Mass., resigned.

- HARRISON, DR. FORREST M., Medical Interne at Government Hospital for the Insane at Washington, D. C., promoted to be Junior Assistant Physician January 1, 1915.
- HASKELL, DR. ROBERT H., appointed Superintendent of Ionia State Hospital at Ionia, Mich.
- HASSALL, DR. JAMES C., Assistant Physician at Government Hospital for the Insane at Washington, D. C., promoted to be Senior Assistant Physician October 1, 1914.
- HATCHER, DR. GEO. A., appointed First Assistant Physician at Central Hospital for the Insane at Nashville, Tenn.
- HATCHER, DR. GEO. E., First Assistant Physician at Central Hospital for the Insane at Nashville, Tenn., resigned July 5, 1914.
- HAUPT, DR. WALTER C., appointed Assistant Physician at Butler Hospital, Providence, R. I., June 1, 1914.
- HAVILAND, DR. C. FLOYD, First Assistant Physician at Kings Park State Hospital at Kings Park, N. Y., returned to duty after six months' leave of absence, December 15, 1914. During this time he had made a survey of the State of Pennsylvania for the Public Charities Association of Pennsylvania, as to the conditions attending the care of the insane in public institutions.
- HAWK, DR. BENJAMIN F., Superintendent of Larned State Hospital at Larned, Kans., resigned.
- HEALY, DR. WILLIAM, appointed Director of Juvenile Psychopathic Institute at Chicago, Ill.
- HERRING, DR. ARTHUR P., Secretary of Maryland State Lunacy Commission, at the request of Governor Manning, made a survey of conditions concerning the care of the insane in South Carolina during the month of February, 1915.
- HILL, DR. EDWARD L., appointed Superintendent of Jacksonville State Hospital at Jacksonville, Ill.
- HORGAN, DR. JOHN AUGUSTUS, Visiting Physician to Foxborough State Hospital at Foxborough, Mass., died at his home in Roxbury, November 11, 1914, after a surgical operation, aged 59.
- HURD, DR. ARTHUR W., Superintendent of Buffalo State Hospital at Buffalo, N. Y., was elected President of the Erie County Medical Society for the year 1915.
- JACOBY, DR. E. O., Assistant Physician at Anna State Hospital at Anna, Ill., resigned.
- JAFFE, DR. SAMUEL, appointed Fourth Assistant Physician at State Hospital for the Insane at Norristown, Pa.
- JAQUES, DR. HENRY P., Trustee of Monson State Hospital at Palmer, Mass., resigned.
- JORDAN, MICHAEL J., Trustee of Boston State Hospital at Dorchester Centre, Mass., resigned.
- KELLAR, DR. WILLIAM N., appointed Superintendent of Western Washington State Hospital for the Insane at Fort Steilacoom.
- KEMPF, DR. EDWARD J., formerly Interne at the Henry Phipps Psychiatric Clinic at Baltimore, Md., appointed Clinical Psychiatrist at Government Hospital for the Insane at Washington, D. C., December 1, 1914.
- KEYES, DR. FRED., appointed Consulting Dentist at Medfield State Hospital at Harding, Mass.
- KIELY, DR. CHARLES E., appointed Medical Interne at Manhattan State Hospital at Wards Island, N. Y., March 22, 1915.
- KIGGEN, JOHN A., appointed Trustee of Boston State Hospital at Dorchester Centre, Mass.
- KINGSLEY, DR. FRED., appointed Consulting Oculist at Medfield State Hospital at Harding, Mass.
- KLEIN, DR. SIMON R., formerly Professor of Histology and Embryology in Fordham University School of Medicine in New York City, appointed Pathologist at Hospital for the Insane at Norwich, Conn.
- KNOWLTON, DR. WALLACE M., appointed Assistant Physician at Boston State Hospital at Dorchester Centre, Mass.
- LAYTON, DR. WILLIAM, for several years First Assistant Physician at Eastern Kentucky State Hospital at Lexington, died in Webster Groves, Mo., December 9, 1914, from the effects of an accidental fall from a second-story window, aged 78.

- LEAHY, DR. SYLVESTER R., Senior Assistant Physician at Manhattan State Hospital at Wards Island, N. Y., resigned March 31, 1915.
- LEISURE, DR. JOSEPH S., appointed Assistant Physician at Nebraska State Hospital at Ingleside.
- LEROY, DR. CHARLES, Assistant Physician of Northern Indiana Hospital for the Insane at Logansport, has entered the United States Public Health Service and is stationed at Kansas City.
- LIND, DR. JOHN L., Assistant Physician at Government Hospital for the Insane at Washington, D. C., promoted to be Senior Assistant Physician October 1, 1914.
- LONG, DR. OSCAR R., for twenty-seven years Superintendent of the Ionia State Hospital at Ionia, Mich., died September 9, 1914, from heart disease, aged 64.
- LONG, DR. THOMAS W. M., appointed Trustee of State Hospital at Raleigh, N. C.
- LORENZ, DR. WILLIAM F., First Assistant Physician at Wisconsin State Hospital for the Insane at Mendota, spent six months during 1914 studying pellagra in the South.
- MCLELLAND, DR. JOSEPH E., Medical Intern at Manhattan State Hospital at Wards Island, N. Y., resigned January 1, 1915.
- MC LAUTHLIN, DR. C. A., Assistant Physician at Woodcroft Hospital at Pueblo, Col., resigned to enter private practice.
- MCNULTY, DR. LLOYD T., Assistant Physician at Dannemora State Hospital at Dannemora, N. Y., took a special course during the winter at McGill University, Montreal, giving special attention to the Wassermann test.
- MACKIN, DR. M. CHARLES, Assistant Physician at Clarinda State Hospital at Clarinda, Iowa, appointed Superintendent of Iowa State Institution for Inebriates at Knoxville.
- MANRO, DR. FRED J., appointed Manager at Willard State Hospital at Willard, N. Y., January 27, 1915.
- MAYNARD, DR. C. W., appointed Assistant Physician at Woodcroft Hospital at Pueblo, Col., with duties limited to serological diagnosis and pathology.
- MEANS, DR. PAUL B., appointed Assistant Physician at New Jersey State Village for Epileptics at Skillman, N. J.
- MELLEN, DR. SAMUEL FAIRBANK, Assistant Physician at Hudson River State Hospital at Poughkeepsie, N. Y., died July 15, 1914, aged 60.
- MERRIAM, JOHN M., Trustee of Westborough State Hospital at Westborough, Mass., resigned.
- MERCER, DR. WHEDON W., Assistant Physician at Peoria State Hospital at Peoria, Ill., resigned.
- MILLER, DR. HARRY A., Medical Intern at Utica State Hospital at Utica, N. Y., resigned December 16, 1914, to enter private practice at Earlville, N. Y.
- MILLIAS, DR. WARD W., Medical Intern at Utica State Hospital at Utica, N. Y., resigned December 31, 1914, to take a position at the New York State Hospital for the Care of Crippled and Deformed Children at West Haverstraw.
- MILLIGAN, DR. JAMES W., Chief Physician of the Indiana State Prison at Michigan City, Ind., appointed Superintendent of Southeastern Hospital for the Insane at Madison, Ind.
- MORRIS, DR. WILLIAM T., appointed Manager at Willard State Hospital at Willard, N. Y., February 4, 1915.
- MORSE, DR. MARY E., Assistant Pathologist at Worcester State Hospital at Worcester, Mass., appointed Pathologist at Boston State Hospital at Dorchester Centre, Mass.
- MOWER, DR. FRANK D., appointed Assistant Physician at State Hospital for the Insane at Columbia, S. C.
- MURPHY, DR. WILLIAM A., appointed Clinical Director at State Hospital at Goldsboro, N. C.
- NEWELL, DR. WILBUR S., Medical Intern at Utica State Hospital at Utica, N. Y., resigned December 16, 1914, to enter private practice at Clayville, N. Y.
- NEWKIRK, DR. M. C., appointed Medical Intern at St. Lawrence State Hospital at Ogdensburg, N. Y., October 24, 1914, and resigned February 24, 1915.

- NOBLE, HENRY SMITH, for thirty-six years a member of the staff of the Connecticut Hospital for the Insane, at Middletown, and for sixteen years its Superintendent, died at the home of his nephew in Waterbury, Vt., March 16, 1915, from diabetes.
- NOLAN, DR. LEONARD S., appointed Medical Interne at Binghamton State Hospital at Binghamton, N. Y., February 15, 1915.
- NORMAN, DR. N. PHILLIP, appointed Medical Interne at Manhattan State Hospital at Wards Island, N. Y., January 1, 1915, and resigned March 15, 1915.
- O'NEIL, DR. D. C., Junior Assistant Physician at Government Hospital for the Insane at Washington, D. C., promoted to be Assistant Physician October 1, 1914.
- OHLMACHER, DR. JOSEPH C., Second Assistant Physician at Clarinda State Hospital at Clarinda, Iowa, promoted to be First Assistant Physician.
- OLIVER, DR. ALFRED S., JR., Acting Superintendent of Eastern Washington State Hospital for the Insane at Medical Lake, appointed Superintendent.
- PAINE, DR. N. EMMONS, appointed Trustee of Westborough State Hospital at Westborough, Mass.
- PATTERSON, DR. ANGUS B., Assistant Physician at State Hospital for the Insane at Columbia, S. C., resigned.
- PETERY, DR. ARTHUR K., appointed First Assistant Physician at State Hospital for the Insane at Norristown, Pa.
- PHILLIPS, DR. CHARLES R., appointed Manager at Willard State Hospital at Willard, N. Y., January 27, 1915.
- PIERSON, DR. HELENA B., reinstated as Assistant Physician at Kings Park State Hospital at Kings Park, N. Y., December 1, 1914.
- PODALL, DR. H. C., appointed Third Assistant Physician at State Hospital for the Insane at Norristown, Pa.
- PUFFER, DR. KATHERINE F., Psychologist at Psychopathic Hospital at Boston, Mass., resigned.
- ROEBUCK, DR. CHARLES T., appointed Interne at New Jersey State Hospital at Trenton, March 1, 1915.
- RUSSELL, THOMAS, Trustee of Worcester State Hospital at Worcester, Mass., resigned.
- SANBORN, DR. CHARLES F., appointed Assistant Physician at Columbus State Hospital at Columbus, Ohio, resigned March, 1915, to accept a position in the Tubercular Hospital in Chicago.
- SCHIEETZ, DR. MILDRED, appointed Medical Interne at Government Hospital for the Insane at Washington, D. C., October 17, 1914.
- SELLERS, DR. LUCULLUS R., appointed Superintendent of Larned State Hospital at Larned, Kans.
- SHEA, THOMAS H., appointed Trustee of Gardner State Colony at Gardner, Mass.
- SHEEHAN, ELLEN, appointed Trustee of Worcester State Hospital at Worcester, Mass.
- SHYTTLE, DR. WILLIAM M., appointed Assistant Physician at North Texas Hospital for the Insane at Terrell, Tex.
- SIMCOE, DR. CHARLES BAILEY, Assistant Physician at State Hospital No. 3, at Nevada, Mo., died November 21, 1914, from nephritis, aged 54.
- SISKIND, DR. ABRAHAM, appointed Medical Interne at Manhattan State Hospital at Wards Island, N. Y., January 1, 1915.
- SMITH, DR. ROSCOE D., Third Assistant Physician at Clarinda State Hospital at Clarinda, Iowa, promoted to be Second Assistant Physician.
- SMITH, DR. WINFIELD, Consulting Surgeon at Westborough State Hospital at Westborough, Mass., died.
- SOUTHER, DR. ROBERT, appointed Consulting Surgeon at Westborough State Hospital at Westborough, Mass.
- STEDMAN, MRS. MABEL W., Trustee of Monson State Hospital at Palmer, Mass., resigned.
- STEVENSON, DR. EFFIE A., Assistant Physician at Worcester Asylum at Worcester, Mass., resigned.
- STEWART, DR. ROBERT A., appointed Second Assistant Physician at State Hospital for the Insane at Norristown, Pa.
- STINGER, DR. RAYMOND H., appointed Assistant Physician at Southeastern Hospital for the Insane at Madison, Ind.

- STOKES, DR. CHARLES F., formerly Surgeon-General of the Navy, appointed Superintendent of the New York City Farm Colony for Inebriates in Orange County, N. Y.
- TALBOT, DR. ROBERT S., Assistant Physician at Central State Hospital at Petersburg, Va., died at the Retreat for the Sick in Richmond, Va., December 10, 1914, aged 37.
- TAYLOR, DR. JULIUS H., Trustee of State Hospital for the Insane at Columbia, S. C., resigned.
- THOMAS, DR. ALBERT C., Superintendent of New Haven Hospital at New Haven, Conn., appointed Superintendent of Foxborough State Hospital at Foxborough, Mass.
- TRENKLE, DR. HENRY L., Assistant Physician at Pontiac State Hospital at Pontiac, Mich., appointed Physician in Charge at Knickerbocker Hall at Amityville, Long Island.
- TRUITT, DR. RALPH P., Assistant Physician at Henry Phipps Psychiatric Clinic at Baltimore, Md., appointed Clinical Director at Eastern Louisiana Hospital for the Insane at Jackson.
- TRYON, DR. GENEVA, Assistant Physician at Psychopathic Hospital at Boston, Mass., resigned.
- VAN ZANDT, DR. EUCLID, formerly Superintendent of Western Washington Hospital for the Insane at Fort Steilacoom, died in Bellingham, Wash., November 20, 1914, from arterio-sclerosis, aged 70.
- VOLDENG, DR. M. NELSON, Superintendent of Cherokee State Hospital at Cherokee, Iowa, appointed Superintendent of the new State Epileptic Colony at Woodward, Iowa.
- WENDER, DR. LOUIS, Junior Assistant Physician at Government Hospital for the Insane at Washington, D. C., promoted to be Assistant Physician October 1, 1914.
- WHITNEY, WILBUR F., Trustee of Gardner State Colony at Gardner, Mass., died January 17, 1915.
- WILEY, DR. EDWARD MAXWELL, formerly Superintendent of Eastern Kentucky Hospital for Insane at Lexington, died in St. Joseph's Hospital, Lexington, following an operation for hypernephroma of the left kidney, aged 64.
- WILLIAMS, DR. FRANKWOOD E., First Assistant Physician at Psychopathic Hospital at Boston, Mass., appointed Executive Secretary of Massachusetts Mental Hygiene Society.
- WILLIAMS, DR. LEWIS E., appointed Clinical Assistant at Manhattan State Hospital at Wards Island, N. Y., October 1, 1914, resigned October 31, 1914.
- WILLIAMS, R. WILLIAM H., appointed Medical Intern at Utica State Hospital at Utica, N. Y., March 1, 1915.
- WILSON, DR. ANITA A., Medical Intern at Government Hospital for the Insane at Washington, D. C., promoted to be Junior Assistant Physician January 1, 1915.
- WITTMAN, DR. ANTHONY G., Assistant Physician at Elgin State Hospital at Elgin, Ill., appointed Clinical Director at Alton State Hospital at Alton, Ill.
- WOODSON, DR. C. R., was assaulted in his office by an intoxicated man and suffered a fracture of the outer plate of the frontal bone.
- WOODWARD, DR. SAMUEL B., Trustee of Worcester State Hospital at Worcester, Mass., resigned.
- WORK, DR. HUBERT, Superintendent of Woodcroft Hospital at Pueblo, Col., was a candidate for election to the United States Senate, but was defeated.
- WORK, DR. PHILLIP, appointed Assistant Physician at Woodcroft Hospital at Pueblo, Col.
- YERKES, PROF. ROBERT M., Psychologist at Psychopathic Hospital at Boston, Mass., has been granted a six months' leave of absence.
- YOUNG, DR. FRANK B., Secretary of State Board of Health and State Health Officer, appointed Superintendent of State Hospital for Nervous Diseases at Little Rock, Ark.





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